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Address.

THE PUBLIC HEALTH ASPECTS OF LEPROSY.*

BY GEORGE W. MCCOY, M.D., WASHINGTON, D.C.,

Formerly Director, U. S. Leprosy Investigation Station, Hawaii.

HISTORICAL.

I SHALL not occupy your time with a discussion of the historical features of this ancient disease beyond reviewing briefly three conspicuous examples of its spread in modern times.

The history of leprosy in the Memel district of East Prussia is rather interesting. The first case was observed in 1848, the infection having been introduced from the Baltic provinces of Russia, where the disease has long been endemic. During the next 60 years 78 cases developed, the epidemic, if you wish so to designate it, reaching its maximum in the early nineties, when about 25 cases existed. Since then the number has declined steadily in this region.

In the Scandinavian Peninsula the history of the disease goes back about a century. In 1856 nearly three thousand cases were known. Measures, which are usually spoken of as being very thorough, were taken to suppress it, and at present the total number of lepers is perhaps under 200.

The history of leprosy in Hawaii is of great interest. It seems to be well established that the first cases were observed about 1850. In 1863 the health authorities took cognizance of it and in the following year definite steps were taken to establish a leper settlement. The disease spread rapidly among the natives, and within a few years had reached alarming proportions. The measures taken were in general intelligently directed and fairly well carried out, and they have been in operation ever since.

The number of new cases of leprosy reported each year has fluctuated considerably, being as high as 558 in 1888 and as low as 23 in 1908. At present, the number is about 50 annually. The total number in segregation remained above 1000 from 1888 to 1899, the highest figure being in 1890, when there were 1213 lepers in isolation. At present the number is approximately 700. The disease has remained chiefly among the people of native blood.

OUR KNOWLEDGE OF THE TRANSMISSION OF LEPROSY.

Unfortunately, our knowledge of this division of our subject is not sufficient to enable us to take such precise and definitely effective measures as we are able to take in connection with some other infectious diseases, for example, plague, yellow fever and malaria. We are confronted at the outset by the fact that the disease is one which we cannot communicate experimentally to animals nor, indeed, for that matter, to man. Perhaps this assertion deserves some elaboration, in view of certain claims that have been made by various investigators in recent years. All of the reports of successful animal inoculation of leprosy, prior to about seven years ago, have remained unverified, and may be ignored. The newer work requires special

* The Cutter Lecture on Preventive Medicine, April 3, 1916.

consideration. Claim has been made that the disease has been reproduced by the inoculation of *leprous tissue* into the Japanese dancing mouse and other laboratory animals. It appears that one's interpretation of these cases depends largely upon the view one takes of the histological appearances produced and what constitutes leprosy in animals.

No reasonable claim is advanced that the condition follows the course of the disease in man, or even simulates it at all closely. There are no good grounds for believing that the lesions produced are dependent upon the introduction of living organisms.

A much larger number of successful inoculations of laboratory animals with *cultures* of organisms grown from leprous tissue has been reported. None of them is convincing, and the experience of my colleagues and myself in Hawaii with the inoculation of dozens of monkeys and hundreds of lower laboratory animals, both with leprous tissue and with cultures, has convinced me that the disease has never been reproduced in the lower animals. The pitfalls in this work are very numerous, and many investigators have fallen into them; the chief ones are the confusion with lesions due to the tubercle bacillus, and the production of lesions due to organisms acting merely as foreign bodies remaining in tissues.

We naturally feel that it is not particularly surprising that animals so far removed from man, as even the higher apes should give negative results, and that if man could be used for inoculation purposes, probably the results would be different. We find, however, that a number of experiments have been made on man and that, with one doubtful exception, all have been negative.

Arning's famous experiment is generally regarded as invalid on account of the ample opportunities for infection the subject had under natural conditions prior to inoculation.

This is perhaps as good a place as any to mention the leprosy-like disease of rats, which has been studied by various workers during the past ten years. Rat leprosy certainly simulates the disease in man very closely and is caused by an organism that is closely related to the Hansen bacillus. It is equally certain that the disease in man is not due to that in rats or *vice versa*. The distribution of the rat disease has not been studied fully, but it is known to be absent from notorious leprosy foci and to be present where leprosy is unknown.

Notwithstanding the absence of strictly accurate and scientific information concerning the transmission of the disease, there are certain facts that we may consider as well established and which have a bearing upon the sanitarian's problem in dealing with leprosy.

Heredity. Possibly the idea of heredity had its inception with the curse pronounced on Gehazi by Elisha when he said, "The leprosy, therefore, of Namaan shall cleave unto thee and unto thy seed forever," or when David cursed the house of Joab, saying "let there not fail from the house of Joab one that is a leper." Certain it is that until comparatively recent years the disease was very generally regarded as transmissible from parent to offspring.

Without going into a discussion of the fundamental biologic considerations of heredity, we may say that leprosy is never or almost never inherited in the same manner as is syphilis, for example. The experience everywhere is that if children are taken away from leprous parents soon after birth and reared in a clean environment, the danger of their developing the disease is almost nil. In Hawaii, there is only one example in which infection occurred under these circumstances.

Insect transmission. This theory is a very attractive and popular one, and that is about all that is to be said for it. There is no evidence whatever to support it. So far as concerns blood-sucking insects, a strong obstacle to the acceptance of the theory is found in the fact that ordinarily the acid-fast bacilli of leprosy cannot be found in insects that have fed on leprous nodules. That the bacilli may occur on flies and on other non-blood-suckers is established, but that they are instrumental in the transmission of the disease is very doubtful.

Without discussing other ways in which leprosy may possibly be transmitted, but which are not supported by any strong evidence, we may say that association with lepers does sometimes result in infection. Generally the statement is made that prolonged and intimate contact is necessary for the conveyance of the disease. This is not an invariable rule. It is not uncommon in endemic foci to have cases in which there is no history of contact with a leper. I have seen more than one person who had the disease who had no knowledge of ever having seen a leper. I have in mind one conspicuous example of the fallacy of prolonged and intimate association. This was the case of a very intelligent, well educated Caucasian, who came from the best stratum of society. This person had lived in an endemic leprosy focus for many years, but had never been, so far as it was possible to ascertain, in even slight contact with a leper. Several Americans have developed leprosy after having sojourned in our tropical possessions, yet without, so far as they knew, ever having been in contact with a leper. So let me repeat, prolonged and intimate contact certainly is not always necessary for infection. Perhaps the most discouraging feature in tracing the source of infection in most cases is the fact that the incubation period is so long. Like most other things about leprosy, exact data on this point are wanting, but we know that the period between infection and the development of symptoms is rarely under two years, often much longer. I have seen a case in which over

six years intervened between the last possible contact with a leper and the onset of symptoms.

The disease progresses very slowly in the great majority of cases. Ordinarily a leper will not change very much in a year. Cases have been watched over long periods—five years or more—without any material change occurring or the disease making any appreciable progress.

In considering this portion of our subject, I should like to call attention to two facts which any satisfactory theory of the transmission of the disease should explain. (1.) We find that the disease spreads readily enough in one place and not in another. (2.) The incidence of the disease is higher among men than among women. Practically everywhere the number of males afflicted is about 50 per cent. higher than the number of females. These are two of the striking facts about leprosy for which we have no satisfactory explanation.

Often the statement is made that hospital attendants and physicians never contract leprosy. This is by no means true. There are at least three examples of infection at the Molokai Settlement of those who have ministered to lepers. One of these is the famous case of Father Damien. In another the diagnosis was made by Dr. Brinckerhoff, and in the third case the diagnosis was made by Dr. Goodhue, Medical Superintendent of the Molokai Settlement, and myself. There are several additional cases at other lazarettos which need not concern us here.

GEOGRAPHY OF LEPROSY.

I want to emphasize at the beginning of this part of my remarks that where leprosy *occurs* and where it *spreads* may be very different. Therefore, we may speak of endemic foci and non-infectable foci. Under the first head we include practically all places in which the disease occurs with the exception of the British Islands, almost all of France and the greater part of Germany and Austria and the greater part of the United States and Canada. The fact that in the most highly cultured parts of Europe and in all of our own country, excepting the Gulf region, the disease shows no pronounced tendency to spread, is naturally a most important one. It means that from a purely public health standpoint we need concern ourselves but little with cases found in these regions.

We are not prepared to say that the immunity of these regions is as absolute, as, for example, is the immunity of certain regions to malaria and yellow fever through the absence of particular species of mosquitoes; but certainly there is abundant evidence that there is practically no risk of transmission in these localities. Thus, in comparatively recent years there have been a few apparently well authenticated examples of infection in southeastern France, and a single case in Ireland,—the well-known one reported by Dr. Hawtrey Benson. There has been a case or two in German territory adjacent to France. In France some concern has recently been felt and certain measures have been recommended,—reporting, surveillance, hospitalization of pauper cases, and exclusion from schools. The distribution of endemic foci is one of the most puzzling and interesting facts in connection with the disease. We know, for example, that all, or practically all, of the lepers in New England and New York are imported cases. In spite of the fact that there have been ample opportunities for people to acquire the infection from association with these imported cases, no spread of the disease has occurred. In Minnesota, where a considerable number of lepers have come in from Scandinavia (perhaps not far from one hundred) there have been few cases developed (not exceeding half a dozen) among persons born in America. On the contrary, in Louisiana the cases are practically all of domestic origin and, I believe, that some of the lepers found in Florida and Texas come under the same head. On the Pacific Coast, where there has been a small though steady influx of lepers, or persons incubating this disease, from the Orient, during half a century there have been, so far as I have been able to determine, but two cases of infection arising from these. At the San Francisco pest house, where there are always about 20 lepers, all are of foreign origin. Those of us who live in the favored parts of the United States must not flatter ourselves that our immunity is one of the compensations for our rather rigorous climate, for we know that Iceland has been an endemic focus of the disease for a century or more, and on this continent New Brunswick has been a famous focus of leprosy for fully as long. The most common explanation given for this immunity of certain localities is that their sanitary conditions are better. I believe that this explanation is not sufficient. One would have some trouble in convincing me that the sanitary conditions under which Orientals and other immigrants live in our great cities are less favorable to the spread of the disease than those under which people in, for example, Louisiana or Hawaii, live.

This peculiarity in the distribution of leprosy is not, I feel sure, a racial matter. For example, we have found that in the Hawaiian Islands, when maximum opportunities for infection occur, that is clean persons living in close association with lepers, there is about as large a percentage of infection among Caucasians as among Hawaiians. While our figures do not cover a large enough number of persons to be of great value, they do not lend support to the theory of racial susceptibility or predisposition.

It is only fair to say that some students of the leprosy problem are of the opinion that the apparent security of communities in which the disease shows no tendency to spread is not to be relied upon. They hold that there is evi-

dence that the disease may, after a period of latency, become established in such a locality and spread in an alarming manner. The evidence that this needs to be considered seriously does not appear convincing to me.

I have not gone into the world distribution of the disease in detail. It may be sufficient to say that practically every country has its quota of lepers, the great majority being, of course, in the tropics, but with a very considerable number in temperate and arctic climates.

TYPES OF DISEASE AND LESIONS.

It is customary to divide leprosy into three types from a clinical point of view. There are first, the nodular or tubercular type (the former term is to be preferred, as it frees us from any possibility of confusion with lesions due to the tubercle bacillus); second, the anaesthetic or nerve type; and third, the mixed type in which there is a combination of the symptoms of the two other types. It is sometimes difficult to determine under which type to classify a particular case, and often the manifestations of cases change while they are under observation, so that a revision of the type diagnosis becomes necessary. From a public health standpoint the determination of the types of the disease is to my mind most important. We have reasonably satisfactory grounds for believing that the acid-fast bacillus found in leprous lesions is the cause of the disease. It follows that unless the bacilli can pass from a leper to another person there is no opportunity for the disease to be communicated. In a considerable proportion of the anaesthetic cases, the only leprosy organisms the patient has are found in the deeper structures, particularly the nerve trunks. Some of these cases never discharge Hansen's bacilli, and a number go for very long periods without developing external bacillus-carrying lesions. We find that nearly all students of the subject agree that pure anaesthetic cases are not a menace to those around them even in endemic foci. Individuals who have no manifestations beyond shrunken and deformed fingers and hands or anaesthetic patches or some combination of these signs of nerve lesions, are almost certainly of no importance from a sanitary point of view.

The next point I want to consider is the matter of "open lesions." We find, running through the literature, statements asserting or implying that the great danger in leprosy is in open lesions through which bacilli are supposed to reach the outer world in great numbers and thereby contribute to the spread of the disease. We will agree that lesions from which bacilli are being discharged probably are sources of infection, but what is often lost sight of is the fact that many open lesions—the majority, I believe—do not discharge leprosy bacilli. A very common form of ulceration in nerve leprosy is that of a trophic nature and occurring at points subject to pressure or friction. The organisms of leprosy are almost never found in such lesions. This fallacy of the "open lesion" has found its way into certain laws and regulations, thus the leper act of India (1898) defines a leper as "any person suffering from any variety of leprosy in whom the process of ulceration has commenced," and I dwell upon it here to emphasize the fact that, without qualification, it is a very unsafe criterion of the probable infectiveness of a leper.

DIAGNOSIS.

From what I have said, you will be prepared for the view that unless the organism which we regard as the cause of leprosy can be demonstrated microscopically, the case, from a sanitary point of view, need not concern us seriously.

The number of stained preparations that need to be made varies. Ordinarily Hansen's bacillus can be demonstrated in the first smear stained; occasionally several must be made, and I have on one occasion made eight before finding the organisms. When bacilli are scanty, they may be overlooked at one examination and found at a subsequent one.

The finding of the bacilli in smears from the nasal mucus or from scrapings from the nasal mucosa has been the subject of much discussion. Usually the bacilli are to be found in this locality when they can be demonstrated elsewhere, but ordinarily they are not to be found early in the course of the malady. In older cases, the nasal cavities usually show the organism. Much more care is required in drawing conclusions from the presence of acid-fast organisms from the nasal cavities than from skin lesions, as acid-fasts are found in this locality in a considerable percentage of healthy persons. In such cases, however, the organisms are not found in the characteristic groups in which they occur in leprosy; they are less numerous and usually more plump than the leprosy bacillus.

There is one point in connection with the clinical diagnosis to which I wish particularly to call your attention. I refer to enlargement of nerve trunks. One often meets with rather loose statements about "enlarged" or "palpable" nerve trunks. I think that Hansen judged this matter correctly when he said that unless one could detect distinct spindle-shaped thickening or beading on a nerve trunk it was better to regard it as normal.

Biological reactions in lepers are not of great value in diagnosis. A large proportion give the Wassermann with the usual antigen used in syphilitic work. This appears to be independent of syphilitic infection. Complement binding occurs also when tuberculin is used as an antigen as well as when extracts of other acid-fasts are used, and we also find it when leprous tissue furnishes the antigen. A goodly proportion

give the various tuberculin reactions, but the luetin reaction appears to be absent ordinarily.

PROGNOSIS.

A pathologist with large experience with leprosy once remarked that one could never be sure that a case of leprosy was cured unless one had a complete post-mortem examination to determine the point. This is doubtless correct from the bacteriologist's point of view, but we must deal with this question in reference to the living. There can be no doubt that a small proportion of lepers recover, so far as recovery can be determined by the most careful examination that it is possible to make. I have had occasion to participate in the discharge of approximately 40 persons from the isolation colony of Hawaii. The late Dr. Brinckerhoff designated apparently recovered cases as "social cures"; that is, persons who had improved to such an extent as no longer to have demonstrable acid-fast bacilli; cases that probably were not a menace to those around them.

TREATMENT.

This has only an indirect bearing on the public health problem of leprosy, but it is a matter of sufficient importance to justify a few words. The first question usually asked is in regard to serums and vaccines. The results have been negative. Medicinal agents chiefly used are chaulmoogra oil and strychnine. Some cases appear to be benefited by these. Locally, caustics are often helpful. The use, by dermatologists, of refrigeration by the application of carbon-dioxide snow in certain skin diseases has been extended to leprosy with good results. The improvement seen in many patients when put under the favorable conditions of the isolation station in Hawaii is remarkable. It may be a surprise to you to know that there is a large field of usefulness for surgical procedures in leprosy. Disfiguring nodules may be excised, necrosed bones removed, necrotic extremities amputated and—perhaps most important—by means of tracheotomy permanent relief may be given for the laryngeal stenosis that is so common among the unfortunates.

The surgical work being done by Dr. W. J. Goodhue, at Molokai, and Dr. H. T. Hollman, of the Public Health Service, at Honolulu, is among the most useful that can fall to the lot of a medical man.

SANITARY CONTROL.

This brings us to the subject of segregation. Not every leper requires isolation. When this is required, one probably had best always insist on institutional care. Home segregation—much practised in Norway, but not approved of by the Scandinavian leprologists—is a poor makeshift.

The Danish law which prevails in Iceland requires that the leper shall sleep alone, have separate cooking and eating utensils, and that these, together with his bedding and wardrobe, shall be washed separately. He is not permitted to care for children, to cook for nor to serve non-lepers, and he shall not make nor receive unnecessary visits. In exceptional cases, where the precautionary measures outlined are not carried out, or when the physician thinks the circumstances warrant, the patient may be isolated in a hospital for lepers.

I need hardly say that isolation need not be absolute nor rigorous. The practice in Hawaii is probably as good as can be carried out. Relatives are allowed to come into the settlement there, but not to mingle intimately with the patients. Such family life as is practicable may be permitted. Children of leper parents should be removed at once to clean surroundings.

The question of the location of a leper colony must usually be decided on grounds other than those purely sanitary. If practicable, it would be better to locate it near a large center on account of the ease and the economy of administration. I have often thought that it might have been better had the Hawaiian authorities established colonies on all of the islands rather than to concentrate all of the lepers at Molokai. It seems reasonable that cases could then be removed from home surroundings earlier than is possible at present. On the other hand, there are advantages in a complete physical severance of the ties that bind persons to the home environment.

The question of requiring patients to work for the purpose of contributing to their own maintenance comes up in connection with institutional care of lepers. At Molokai no work is required, but if patients want to work they are paid for such as may be assigned to them.

So far as I know, segregation has never had an entirely fair test anywhere. It is impracticable to get cases early enough and to get a large enough proportion to give a community the full benefit of isolation. Unintentional or wilful concealment keeps many from coming under the control of the sanitary authorities until the disease has been in existence for several years. Even such partial measures as it is possible for a community to take appear in the light of experience to be valuable, but if all the lepers could be gotten early we have reason for believing that results equally brilliant would be obtained, as have been secured with certain other infectious diseases. Some of the difficulties encountered in the attempt to enforce segregation in endemic foci may be emphasized when I say that they might be compared with those that may be imagined if in any American community we attempted to segregate all cases of tuberculosis.

The present status of leprosy in the United States is worth a brief reference. The import-

ant endemic foci are confined to the Gulf coast, Louisiana furnishing by far the largest part.

The number of lepers in the country known and reported by health officers is under 150. The true number probably is double this at least. To show how chaotic is our information on this point, I may say that at a recent hearing before a Senate committee in Washington the estimates of the number of lepers in the United States varied from 150 to 2400.

Original Articles.

SOME EXPERIENCE BEARING ON THE MEDICO-LEGAL VALUE OF THE PRECIPITIN TEST FOR HUMAN BLOOD.*

BY ERNEST L. HUNT, M.D., F.A.C.S.,

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Assistant Pathologist and Surgeon to Out-Patients, Worcester City Hospital,

AND

ORA M. MILLS, WORCESTER, MASS.

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FOREWORD.

FOURTEEN years ago† Professor Edward S. Wood, of honored memory, read a paper before this Society entitled "The Serum Test for Human Blood," in which he described the so-called precipitin test of Uhlenhuth, and states: "By our old methods (without this recent test) we were able to testify that a certain blood-stain gave results on measuring the red blood cells obtained from the stain, which showed that the blood-stain was consistent with its having been made by human blood, and, further than that I do not know that any expert has ever testified. But now if we obtain a positive result by this serum test, we can say that the stain contains human blood serum, and does not contain that of any other animal except some species of monkey."

The conclusion Dr. Wood then announced became the accepted view as to the value and reliability of the test throughout this community, both among physicians and officers of the law, with the additional inference, supported by certain of our text-book writers, that the age of the stain did not materially increase the difficulties or detract from the reliability of the reaction.

This paper is based on:

1. An experience entailing a disappointment.
2. A series of laboratory efforts to explain or supplement the experience.

* Read, in slightly different form, before the Massachusetts Medico-Legal Society, February 2, 1916.

† February 4, 1902.

THE EXPERIENCE.

My* particular interest in this test was aroused by an important murder case which occurred in our district, and for which a young man was tried by the Superior Criminal Court, at Worcester, Mass. The story of the case is briefly this: The victim was a peddler of dry goods and furnishings, who drove a cart through some of the mill towns in the southern part of the 11th Worcester District. About 11.30 p.m. on a certain date, the night officer in A—— met the team jogging slowly toward A—— from the direction of B——. Not receiving an answer to his salutation, he investigated, and found the body of the owner, head down, in front of the seat, legs up over the seat, wrapped in blankets, and having a wound in the front of the chest. The autopsy showed that he had been shot from behind with a shotgun, at close range. His hat was trampled with hay, chaff and manure, and the trail of the wagon in the snow led to the mill hamlet of C——, seven miles south, where the victim had been and where his movements were traced up to 8.30 p.m. Next day there were found in the stable where he customarily put up, especially in the stall opposite the one his horse usually occupied, and scattered about the floor adjacent, many blood stains, mostly matted with straw, bran or chaff, and some also on the middle plank of the stall floor. These were variously explained as due to the killing of fowl, the slaughter of pigs (usually done in the adjoining wash-room), and by the discharges of a bull with "black water," which had been kept in that stall two weeks previously. Most of the blood spots were moist when found. Later a gun capable of inflicting the wound was found broken, and the portions hidden in different places within the barn. Still later, the watch of the murdered man was found carefully hidden in the house, and on the same floor as the room occupied by the young man who was in charge of the stable at the time the murder must have happened, and who had the only key to the room where the gun was customarily kept, not otherwise accounted for.

By order of the District Attorney, the blood stains were turned over to Prof. William F. Whitney for identification. A few weeks later, however, Prof. Whitney advised us that he was awaiting a serum from Germany, and feared that it might not arrive because of the difficulties of communication with that country, and invited me to prepare a serum.

Accordingly I began the immunization of four healthy rabbits by the technic of Dr. Paul Uhlenhuth, as described and exemplified in his monograph, kindly loaned me by Prof. Whitney, varying only and very slightly the intervals of injection, as the exigencies of obtaining the necessary blood compelled, but adhering very closely to the optimum of 2.5 cc., intravenously, every five days for three doses, bleeding on the seventh

* E. L. H.

day, after the last dose. After a much longer period than this and by repeated injections, I finally produced an active serum (titer 1-5000) just a day before Dr. Whitney received a supply from Germany, which gave a higher titer (1-10000 feebly) but reacted less promptly and with less definiteness than mine in the lower dilutions.

Armed with these sera, Prof. Whitney and I,* carefully watched in the interests of the defence by Prof. A. W. Balch, proceeded with the tests as follows:

1. Ascertained the titers as above.
2. Ascertained the specificity against horse, beef, pig and sheep blood, 1-200 dilution, finding both negative to these species.
3. Tested solutions from dried blood stains, made with .85 saline solution, carefully centrifugated to clearness and diluted so that all gave a cloud with nitric acid, corresponding as nearly as possible to 1-1000 solution of fresh human serum, as follows:

(*a*) Blood from the victim's shirt now about three months old.

(*b*) Old blood stain on dress of another murder case about nine months old.

(*c*) Blood clot from stable, using best specimen, found in moist state and practically free from straw.

(*d*) Human blood on gauze pad, dried in laboratory six weeks.

There was absolutely no reaction in any of these tests, although both sera reacted promptly and well with fresh human serum.

Drs. Whitney and Balch reported to their respective attorneys failure to identify the blood beyond the general statement that it was of mammalian origin.

The accused was acquitted.

After the trial we secured the blood-stained plank and a scant specimen of the bloody straw, and began a further study of the method.

THE LABORATORY STUDY.

(*a*) *The Preparation of the Immune Sera.*

We have prepared our sera by the immunization of healthy rabbits, chiefly by the intravenous injections of fresh, sterile, human serum obtained: (1) from bloods sent to the laboratory for Wassermann tests for syphilis, (2) strippings from the placental ends of the umbilical cords in the maternity ward, drawn immediately after severing the same, (3) occasional bleedings for therapeutic purposes. The bloods aseptically drawn were allowed to clot over night, after loosening the initial early clot from the walls of the container with a platinum wire, the resulting clear serum being pipetted off. Rarely a slight admixture of corpuscles had to be separated by centrifugation, although in certain cases this was not done, as Hektoen states that by retaining corpuscular elements an anti-serum of greater value for medico-legal work is obtained; (4) hydrocele and pleuritic fluid were made use of on occasion to supplement our supply of human serum, but proved to have less active antigenic properties.

As to the matter of dosage and intervals between injections, we find that the chief authorities agree only in a general way. With one exception, we have started the rabbits according to the method advised by Uhlenhuth, which is to inject two or three cc. into the ear veins, every 5 days for 3 doses, bleeding for trial on the seventh after the last dose, and daily for two or three days, bleeding in quantity when the trials show a valuable anti-serum. We did not follow his advice to kill the animals and take all possible blood when a satisfastory serum had developed, for the reason that we never found one to give the 1-20,000 titer, that he stipulates, so always continued the immunization, hoping to raise the value. When continued immunization seemed indicated, it was our plan to give a new series, with the doses and intervals as before, and this sometimes succeeded on the fourth, or more, trials. (See Nos. 2 and 12, second series.) Sometimes after a rest of several weeks, a resumption of injections would produce a better serum than a former series had done. (See No. 8, 2d series.)

The one exception was made in an effort to apply the rapid method of Fornet and Muller, as recommended by L. Hektoen. This rabbit (No. 11, 2d series) received by the intraperitoneal route three doses of defibrinated blood on consecutive days of 5 cc., 10 cc., and 15 cc., respectively, and was bled every other day thereafter by aspirating the ear vein for a test amount, 2 cc.; the reaction of immunity attaining its high point on the 14th day after the last dose, remaining there for about five days, then receding.

Our method of obtaining the test portions of blood by aspirating the ear vein, we have not noted in other works. It requires considerable dexterity of manipulation, but is inoffensive to the rabbit, and does not maim the ear.

We obtained the blood in quantity when the immunization had reached a satisfactory point, as indicated by the test titrations, by means of cardiac aspiration. This is well borne by the rabbit when correctly done, yields 15 to 30 cc., and has the great advantage of asepsis, and the lesser of preserving the animal for further use.

The blood so obtained is driven out of the syringe into a sterile petri dish slanted so that the clot will form at one side. When the clot has fairly formed it is placed in the ice-box, slanted in the opposite direction. Next day the clear serum is removed with a sterile pipette, titrated, tested for specificity, and, if it is to be stored, is sealed in glass ampoules, and thereafter stored in the ice-box with all light excluded, in the upright position, to allow corpuscles to settle, if any remain (Nuttall). Usually the animals are starved 24 hours before bleeding. (Uhlenhuth, rule to avoid opalescence.)

* E. L. H.

The chief difficulty encountered during the progress of the immunization was the rather frequent death of a rabbit from anaphylactic shock. The third dose by the Uhlenhuth method was usually the first to be dreaded, but we lost most after several series of injections had been administered, the symptoms being dyspnea, paralysis of the hind quarter, then forequarter, then respiratory failure, and all in a period of 5 to 10 minutes. In several instances they would rally after a period of dyspnea, or even after the paralysis of the hind quarters, and be hopping about as usual after a half hour.

Altogether we immunized fourteen rabbits, of which seven gave at some period a workable serum (*i.e.* 1-1000 to 1-2000), three gave sera of fairly high value (1-5000 to 1-10,000). Of the fatalities, 4 died before producing a serum of any value, three of these being from anaphylactic shock, and one from abuse by other rabbits. Of the other three, one died of shock after producing our best serum, two died from heart aspiration, after producing workable sera. (See Tables 1 and 2.)

TABLE 1.

First Series	Immunized by	Best Titer	Result
1	Pleuritic fluid	Opalescent	Died from bleeding
	H. blood serum	Very low	
2	Human serum	1/1000+	Sick—killed
3	Pleuritic fluid and H. serum	1/500++	See series No. 2
4	Human serum	1/5000+	See series No. 2
5	Human serum	1/1000+	Retrogression See series No. 2
7	Human serum	1/500+	Died from bleeding
8	Human serum	1/500++	See series No. 2
9	Human serum	1/1000+	
10	Pig serum		Died

Table 1 shows results of first series of immunization experiments.

TABLE 2.

Second Series	Immunized by	Titer	Result
1	Hydrocele fluid and H. serum	1/2000+	Died after bleeding
2	Same	1/10,000±	Still living
3	Beef serum	1/500+	Died. Serum infected
4	Pig serum	1/500+	Died —anaphylaxis
4	Pig serum	0	Died—infection
5*	Human serum	1/2000±	Died —anaphylaxis
6†	Human serum	0	Died —anaphylaxis
7	Beef serum	1/100±	Died—infection
8‡	Hydrocele fluid and H. serum	1/1000+	Still living
9§	Hydrocele fluid and H. serum	1/5000+	Died —anaphylaxis
10	Defibrinated H. blood — Hektoen method	1/1000+	Still living
12	Sheep serum	1/4000+	Still living
13	Pig serum		Not completed
14	Human serum	1/200+	Still living

Table 2 shows results of second series of immunization experiments. Pig and beef blood from slaughter house always contaminated. Sheep serum, aseptic.

* No. 4 in First Series.
† No. 3 in First Series.
‡ No. 5 in First Series.
§ No. 8 in First Series.

None of our rabbits gave sera of the high value recommended by Uhlenhuth (*i.e.* titer of 1-20,000). Comparing these results with those of other workers, we find that in Uhlenhuth's published protocols of 13 rabbits immunized with human serum, five were worthless, two reached the 1-20,000 point, but retrograded; five gave 1-20,000 serum, and one gave a titer of 1-200,000, these last six being killed, and the sera preserved.

Some years later in his Harben lecture (1911) Uhlenhuth made the statement that it is not uncommon to find but one rabbit in a series of ten capable of producing serum of the potency he requires.

Hektoen immunized nine rabbits by the rapid method, which he favors, with these results: One was refractory, four gave workable (1-2000 or under), two 1-10,000 to 1-12,000, respectively, two gave 1-20,000, his titers being read after standing one hour at room temperature.

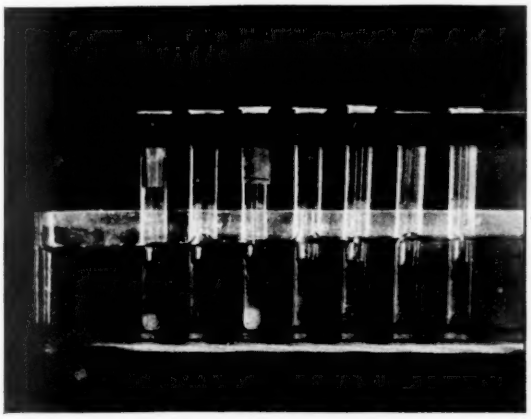
Many writers do not specify their standards, but refer to their sera as strong or weak. Wassermann and Schütze use a different method of standardizing, but utilize relatively weak sera, warning against too high potency as tending to give group reactions. Muir and Martin say, "With the serum of rabbits vs. man .05 cc. precipitation is distinct with .001 cc. of human serum, almost absent with .0001 cc." Hektoen points out, and Uhlenhuth's protocols reveal that it is a matter of greater difficulty to obtain a rabbit anti-human serum of high potency than is the case with that of lower animals. This is also in keeping with the experience of many in preparing anti-human amboceptor for the Noguchi modification of the Wassermann test, and is the chief reason that it is not in more general use at present. Nuttall and Graham-Smith used the proportions of 1 part immune serum to 20 parts of solution of blood to be tested in their experimental work.

Granting the desirability of sera of high potency, especially for the important work of identifying medico-legal specimens, we do not feel that the conclusions to be drawn from the experiments about to be detailed are vitiated from having been made with sera of relatively low titer, though regretting that they are less far-reaching in their bearing upon the subject than they might otherwise have been.

More especially is this experience of value since it is the purpose of this paper to emphasize the difficulties and uncertainties of the method, that in cases where the circumstantial basis depends upon the identification of blood stains, they may be anticipated, and their possible consequences minimized by the exercise of suitable precautions on the part of the medical examiner.

In carrying out our tests we have followed the technic described by Uhlenhuth in his monograph, using always 1 cc. of the test solution of various strengths, and adding .1 cc. of the anti-

serum, except in some instances, where we used .05 or .06 cc. for reasons of economy. The tabulated experiments are with the former amount. The test solutions which he prescribes should be made to as near 1-1000 as possible, for the medico-legal test of a stain, and the controls are: (1) the test solution against normal rabbit serum, (2) fresh human serum against the anti-serum, (3) serum of some lower animal 1-200 against the anti-serum, (4) of some other animal ditto, (5) 0.85 saline, (6) an extract of the fabric or material from which the stain is taken.



PRECIPITIN TEST.

Typical Reaction (after settling 24 hours). All negative save No. 1 and No. 3, the test serum and known human serum, respectively; all other controls clear.

For the experimental work we have used more concentrated test solutions, as seemed more suitable to the titers of our anti-sera, viz: 1-100 or 1-200 as advised by Nuttall.

For the purpose of showing the intensity of our reactions we have adapted the method in common use for recording Wassermann tests, using a three plus (+++) to indicate a strong, two plus (++) a fair, one plus (+) a slight but definite, and a plus or minus (±) a very slight reaction.

(*b*) *Trial Applications of the Test.*

For nearly a year, in anticipation of the time when we should be provided with adequate sera, we saved blood material for the purpose of studying the efficiency and reliability of the method, particularly as regards the influence of drying. For this purpose we gathered bloody gauze from operating rooms, blood-stained dressings, clothing from medico-legal cases, blood-soaked newspapers, and an old sponge soaked with rather putrid blood. Solutions made from materials of this nature being obviously of uncertain strength, we adopted the plan, also, of drying accurately measured amounts (.1 cc.) of serum, and of defibrinated blood (containing corpuscles) on clean glass slides. Such specimens were made twice weekly from the blood sent to the laboratory for Wassermann tests, thus affording means of comparing solutions of known strength of varying ages, wherein obviously the serum would have been subject to no deteriorating influence other than that of drying.

Table 3 shows results of such tests with dried specimens from one to six months old, with a serum of low potency. The results there indicated show plainly that drying deprives the blood of some of its power to react with the precipitin. The question immediately arises, would this hold good if a stronger anti-serum were employed? Applying our strongest serum (1-5000) to two specimens of dried serum, five and eight months old, respectively, we find (as shown—see Table 4) practically the same result. The

TABLE 3.

TEST JAN. 26, 1916.

A.: H. Serum, No. 8, Second Series.

No.	TITER	1/100	1/500	1/1000
	Fresh serum	+++	++	—
	Dried serum			
1	1/3/16	+++	++	±
2	12/3/15	+++	+++	++
3	11/2/15	+++	+	±
4	10/1/15	++	+	—
5	9/1/15	+	—	—
6	8/3/15	—	—	—
7	7/3/15	—	—	—
8	6/4/15	—	—	—

TABLE 4.

JAN. 28, 1916.

A.: H. Serum, No. 9, Second Series.

20 MINUTES	1/100	1/500	1/1000	1/3000
Fresh serum			+++	++
Dried serum				
9/9/15	+	—		
5/6/15	±	—		

solutions of the dried bloods were carefully made, and save for flocculi in some, which had to be filtered out, were complete, showing that lack of solubility was not the cause of failure to induce a reaction. Comparing No. 2, Table 3, with the fresh serum above, we find a more active reaction in the former, which represents serum dried nearly two months. The titer of the anti-serum there used was by previous tests established at 1-1000 (+), and the seeming anomaly suggests an *individual variation* in the power of blood to react with their homologous anti-sera.

Working with the specimen dried on various fabrics by extracting the stain with saline (.85) over night, centrifugating to greatest possible clearness and diluting to estimated strength of 1-200, except as otherwise indicated, and testing with both high and low value serum, 1-1000 and 1-5000, respectively, we obtain results shown in Table 5, which indicate again in general that the older the stain the less likely it is to react. The greater potency of anti-serum compensates somewhat for the inhibiting influence of drying,

TABLE 5.

TEST JAN. 18 AND 22, 1916.

A.: H. Serum R No. 8: 1/1000 value.

A.: H. Serum R No. 9: 1/5000 value.

No.	TEST OBJECT		SOL.	REACT. LITMUS	COLOR	SERUM 1/1000	SERUM 1/5000
	Beef serum, fresh		1/100	Neut.	Pale	±	
	.85 saline solution			Neut.	Clear	—	
	RECENT						
1	Menstrual stain on trousers		1/500	Neut.	Pale straw	+++	
2	Ascitic fluid	1/17/16		Neut.	Very pale straw	+++	+++
		1 Gauze	1/200	Neut.	Pale straw	+++	+++
3	Pus dressing	1/17/16	1/200				
4	Blood on newspaper.....	11/17/15	1/200	Neut.	Pale brownish	+++	
5	Blood on newspaper.....	11/5/15	1/200	Neut.	Pale brownish	—	
6	Blood, adbominal dressing	9/14 (a)	1/200	Neut.	Reddish	±	+++
7	Blood, abdominal dressing	9/14 (b)	1/200	Neut.	Reddish brown	—	
8	Blood, sponge, foul.....	5/19/16	1/200	f-ac.	Reddish	+	+++
9	Blood, cloth	5/19/16	1/200	Neut.	Pale straw	+	+++
10	Blood, "Burke" Gauze ..	5/15/15	1/200	Neut.	Pale straw	—	—
11	Blood, shirt	18 mo. old	1/200	Neut.	Limpid	—	
12	Blood, victim's shirt	12/21/14	1/200	f-alk.	Reddish	—	—

and also seems to indicate, as above suggested, that there is variation in power to react with the precipitin in the blood of individuals of the same species, especially shown by Exp. No. 10 in Table 5, in which the test object was a gauze pad from the operating room, saturated with blood, put into a clean envelope and kept in the laboratory, in a drawer, and which could not have been contaminated, yet which has invariably resisted the precipitin test with several different sera, and is comparable to the results with the blood-stained shirt from the murdered man, which tested three months after the murder by one of the best serums I have produced, by the serum imported from Germany, and recently by our best serum (13 months after the murder) as shown in Table 5 has been invariably negative. To my mind these results suggest that there are certain bloods which react to a precipitin developed by serum from certain other individuals of the same species so weakly that drying completely inhibits them. An important deduction from the observations is that in an important case it would be well to save some of the fluid blood at the autopsy, which might be used to immunize, on the expectation of a more valuable serum for that individual, and to saturate some filter paper or gauze, and dry, to preserve for use as control in making the tests,—a precaution advised by Uhlenhuth, and called to the attention of this Society by Dr. Whitney fourteen years ago.

Recalling the case narrated at the outset,—our failure to reach a conclusion as to the identity of the stains found in the stable or on the murdered man's shirt by means of the precipitin test is noteworthy. On that account we are led to diverge from the specific subject of this communication briefly to cite the further pursuit of that important question,—were the stains made by human blood?

After the trial there remained to us the blood-stained plank, the shirt mentioned, and a small bunch of hay chaff, matted together by a brownish substance which gave the guaiac and benzidin tests for blood, and was similar to the material which Professors Whitney and Balch had testified was mammalian blood.

Applying the complement-fixation method of Neisser and Sachs, we obtained a strongly positive test with the solution from the straw, and an absolutely negative one from an infusion of the unstained straw. This corresponded to the reaction by the same method from solutions made from the stains on the shirt. Solutions from the plank stains also gave positive reactions, but solutions from this source proved in control highly anti-complementary, and therefore useless for this test. The solution from the shirt was also found to be slightly anti-complementary, but we thought not sufficiently to discount the reaction completely. The solution from the hay stain was diluted to the point where anti-complementary power disappeared, and then showed a distinct binding of complement,—a reaction equivalent to the "1+" Wassermann test. Controls with beef and pig blood were negative. Solutions from the stain on gauze pad No. 10 in Table 5, and from the sponge with old putrid blood, both gave strong positive tests.

The authors Neisser and Sachs claim for their method a delicacy forty times that of the precipitin test, while Muir and Martin think it between 10 and 100 times more delicate. It certainly is more striking, and is not vitiated by slight cloudiness of the test solution. It is far more complicated and requires elaborate controls, and the outfit of a Wassermann laboratory is needed. Uhlenhuth claims that in the absence of a positive precipitin reaction, this test is insufficient to establish the source of the blood.

CONCLUSIONS.

From the results herein described we may draw the conclusions:

1. That the precipitin test *when it reacts* is a valuable and positive method of identifying blood stains (albumins). A negative test does not of itself *disprove* the presence of the homologous blood.

2. That the preparation of a serviceable serum may be a matter of weeks, and consequently a supply of adequate sera should be on hand, in order that the stains may not be subjected to prolonged drying before testing.

3. That in a murder case it would be of advantage to have blood from the victim in sufficient quantity to carry out an immunization, thus being better prepared to obtain a serum of high specific value.

4. That there may be individual variation in power of blood to respond to the precipitin test; consequently, failure to identify should not be considered final until other and stronger sera and the complement-fixation test have been tried.

Finally, we are glad to have occasion to pay a tribute of respect and admiration for the monumental labors of Professors Uhlenhuth and Nuttall and their co-workers and for the wonderful care, patient persistence and masterly insight with which they have, over a period of several years, studied by countless experiments the subject of precipitins, both in relation to their value to forensic medicine and in their bearing on biological problems, and by means of which they contributed appreciably to our knowledge of one of the processes by which Nature works her marvels of immunity, as well as finding important evidence of the blood relationship of certain species, supporting by tangible evidence certain conceptions of the evolutionists.

Our thanks are due to Professor William F. Whiting for the loan of Prof. Uhlenhuth's monograph, to our associates at Worcester City Hospital for saving and forwarding materials for the work, and to Dr. Frederick H. Baker for privileges in connection with the case cited.

[From the Laboratory of Pathology at Worcester Hospital.]

NOTES.

Nuttall, p. 75 "In medico-legal work it will be desirable progressively to dilute a suspected blood sample, and to reach a conclusion upon the highest dilution (within limits) which reacts to a given anti-serum. In routine work, as I have stated, I have worked with dilutions of usually 1 : 100 to 1 : 200. As the dilution increases, the reaction narrows down more and more, the reactions with the highest dilutions being practically specific."

Nuttall, p. 398. Ohamato (4-1902) testing various human blood stains obtained negative results in about 1-7 of them. He found very old and putrid blood generally to give a negative result.

Graham-Smith, dilutions 1-21, using distilled water as the first solvent, made a series of tests on blood-stained implements from Scotland Yard. All but one of 17 specimens, aged from 5 months to 30 years, were positive in from 5 m. to 1hr., incubated at 37°C., except one which was mixed with rust and oil. Blood-stained fabrics from same source, 3 to 28 years old, obtained clouds in from 15 minutes to 1 hour in 10 out of 12.

Uhlenhuth tested upward of 60 specimens of dried blood from various animals as well as human sources placed at his disposal by the Prussian Minister of Justice, not being informed of the sources, with correct results in every case. He also records tests of mummified (preserved) specimens many years old, the source of which he was able to identify. Other stains he identified, varying from 6 to 12 years of age.

Many recorded results of tests, which state no definite values of sera used, are useless to us for purposes of comparison.

Both Nuttall and Uhlenhuth warn against the use of sera of high potency with low blood dilutions, on account of group reactions.

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FIBROMA OF MEDIASTINUM: REPORT OF A CASE.

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Among the diseases of the mediastinum, tumors, both benign and malignant, occupy a most interesting and important place. The differentiation of malignancy or benignity of such a tumor is more histological than clinical, since the ill effects are mostly due to pressure upon various vital structures situated in this limited area. A simple benign tumor, elsewhere sit-

uated, attracting little attention and doing little or nor harm, may in this region, on account of its peculiar locality, cause grave consequences.

A simple benign fibroma of the mediastinum is of very rare occurrence. It is so rare, indeed, that it has been considered a pathological curiosity. Hare[1] in his collection of 520 cases of affections of the mediastinum, was able to report seven cases of so-called fibroma, from the literature. Some of them were undoubtedly incorrectly diagnosed. Hoffman[2] accepted five out of the seven cases, but some of the original articles were not available to him. The greater part of this number were more in the nature of fibrosarcomata than simple fibromata, as was pointed out by Christian[3]. So far as it is known to me, there have been no new cases reported, with the exception of those of Forni[4]. In his series of tumors of the pericardium, he has been able to collect three cases of fibroma, which were of comparatively recent date.

Although the general tendency is to classify fibromata of the pericardium under a separate heading, for the sake of convenience and completeness as well as on anatomical grounds, they could be classified under the general heading of fibromata of the mediastinum.

Through the courtesy of Dr. Christian, the writer is permitted to report the following case of typical simple benign fibroma of the mediastinal region, and to add it to the scanty total.

The patient, a white man, 51 years of age, was admitted to the medical wards of the Peter Bent Brigham Hospital on September 14th, 1915, complaining of "cough and dyspnoea." His family history was negative and his past history uneventful except for an operation nine years ago for gangrenous appendicitis, with phlebitis and questionable pleurisy as sequelae. He led a busy life as chairman of a board of assessors, with considerable nervous strain. He was free from any cardiac-respiratory ailment prior to his present illness, which began a little over one year before admission, with slight dyspnoea. His cough began in the summer of 1914 and was aggravated by a bad cold in the autumn of the same year. Cough was worse at night than in the day. It was brassy in character and only productive in the morning. This persisted and grew worse, often keeping him awake all night. He had "fever" and was kept in bed for two weeks in March, 1915; he was thirteen pounds underweight two weeks before admission.

On physical examination he was a well developed, well nourished and moderately muscular man, free from any pain. His mental state was clear. His voice was hoarse. The left clavicle was perhaps a trifle more prominent than the right. Respiration was quiet, slow and shallow. There was good resonance throughout the whole lungs, with possibly some impairment below the left clavicle, where both breath sound and vocal fremitus were decreased. Here some fine and median râles were heard. The apex beat of the heart was felt 9 cm. from the median line in the 5th interspace; the left border was percussed 9 1-2 cm. and the right border 2 1-2 cm. from the median line in the 4th interspace. The above cardiac dulness began at the 3rd rib. The cardiac action was slow and regular. There were no murmurs and no retro-manubrial dulness. The radial pulses were equal, regular and synchronous; rate the same as that at the apex. They were of good volume and low tension. Carotid arteries and jugular veins were normal on both sides. Vessel walls were somewhat sclerotic. Systolic blood pressure. 115; diastolic blood pressure 85, being equal on the two arms. Larynx showed some redness and edema of false vocal cord. The vocal cords were symmetrical, white and met symmetrically on phonation. His temperature was always normal in the morning, but became slightly elevated in the evening, twice reaching 100 degrees F. No tubercle bacilli were found in the sputum, which, however, contained many pus cells, mononuclear cells and a few organisms. Wassermann reaction (blood serum) was negative. Upon removing the Rehfus tube, after withdrawing the stomach contents, a distinct resistance to the extraction of the tube was felt and a considerable amount of force was needed to withdraw it. The gastric juice contained no free hydrochloric acid. Roentgenological examination showed a definite shadow extending a considerable distance beyond the normal shadow of left auricle. The transverse diameter of the heart at this region, including the shadow, measured 11 cm. The ventricles were small in size and the posterior mediastinum was clear. By fluoroscopic examination, a definite pulsation, diastolic in time, was observed over the shadow beyond the region of the left auricle.

Under treatment, the patient gradually gained in strength and appetite and his diarrhoea very much improved. He was discharged on September 22d, 1915. The following diagnosis and possible diagnoses were made: Hypochlorhydria; Aneurysm of the aorta? Neoplasm or cyst at the root of lungs originating in the mediastinum? Pulmonary tuberculosis?

On October 4th, 1915, patient again came to the Peter Bent Brigham Hospital in the hope of being relieved of his cough, which still distressed him a great deal. His symptoms and signs were practically the same as those recorded during his first admission. Fluoroscopic examination showed the shadow of the mass in the region of the left auricle had not increased in size. It did not seem to be connected with the aorta. As he was rotated in position, the shadow did not seem to extend far enough posteriorly to be on the level with the descending aorta. It still pulsated and the pulsation was seen quite definitely following the pulsation of the ventricle. Well above the cardiac shadow was a distinct and clear shadow of aorta. No evidence of diverticulum, constriction or irregularity of esophagus was noticed. He was discharged again on October 7th, 1915, practically in the same condition as before.

He went back to work. His cough was unimproved and no new symptoms appeared until February, 1916, when there developed an ischiorectal abscess which was promptly incised by his physician, but refused to heal. At the same time he had a severe bronchitis accompanied by elevated temperature. On examination, moist râles were heard over bases of both lungs, but the left lung was more involved. Culturally, Pfeiffer's bacilli and a few pneumococci were obtained from the sputum. He steadily lost flesh and had bronchorrhea (5-6 oz. daily); attacks of dyspnoea after slight exertion,

severe cough with occasional sweating and some elevation of temperature (100-101 degrees F.). His diarrhoea had subsided, but his appetite was very poor. A fluoroscopic examination made at this time showed the shadow in the region of the left auricle to be very much larger than when it was observed in the hospital. It did not move when the breath was held and no pulsation whatever was seen. He died on May 10th, 1916. "Death was from septicaemia, the final infection being of the cheek, the buccal surface of which presented as a sloughing and stinking ulcerative process."

Autopsy was performed by the patient's physician and his notes were as follows: "On removal of the sternum, a tumor presented in the anterior mediastinal space over the pericardium. No metastases were found. The left lung was free and normal in appearance, collapsing normally. The right lung was densely adherent to the pleura throughout, engorged with blood, and friable. Heart and vessels seemed normal. On account of arterial embalming, no careful incision was made either into the lungs or through the arteries." Although the autopsy was far from complete, there were no evident metastases found and the tumor did not assume an invasive character.

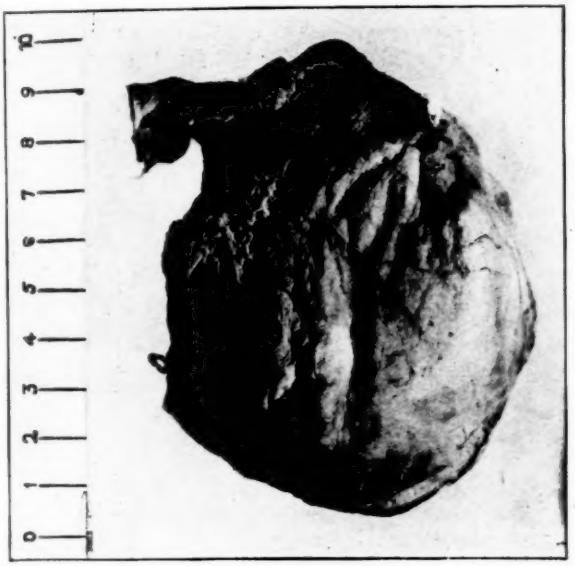

FIG. 1. TUMOR UNCUT.
Notice the size and shape of the tumor and its smooth capsule. The stump has been removed.

Grossly, it is a circumscribed, flat oval tumor (Fig. 1) of a rather firm consistency measuring 9x8x4 cm. and weighing 180 gms. It is enclosed in a definite capsule which can be stripped off with little difficulty. The surface of the tumor is smooth as a whole with a few small oval projections. At the posterior aspect of the tumor, in continuation with the capsule, there is a short connective tissue stump which apparently served as an attachment to the anterior wall of the pericardium. On section the tumor is found to be composed of numerous lobes of grayish color and of various sizes, separated from one another by bands of connective tissue. In the capsule, numerous connective tissue bands with blood vessels can be seen extendig down into the tumor. The small nodular projections can be separated with little force. They are comparatively soft and can be crushed with the fingers. In one half, the tumor is much more fibrous than in the other and the nodular projections softer.

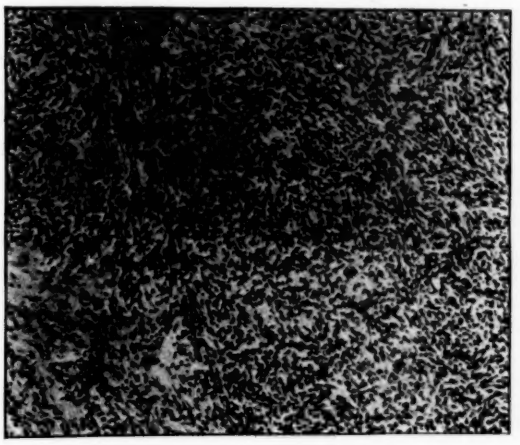

FIG. 2. PHOTOMICROGRAPH.
Notice the uniformity of the cells, the irregularity of arrangement and many lymph spaces. 150x.

Microscopically, the tumor (Fig. 2) is found to be composed of masses of connective tissue cells which are well defined and differentiated, but very irregularly arranged. It is well supplied with blood and lymph vessels. The connective tissue stroma is abundant and separates the tumor into lobules. The individual tumor cell is spindle in shape with a fusiform nucleus rich in chromatin. No mitotic figures are found. Collagen fibrils are abundant. There are no signs of degeneration or necrosis.

Pathological diagnosis:—Fibroma durum.

From the standpoint of physical diagnosis, there are two groups of signs and symptoms, namely:—Symptoms attributable to pressure in the mediastinal region manifested by his chronic cough, hoarseness of voice, dyspnoea and the resistance offered to the extraction of the Rehfus tube, and secondly a definite shadow in the region of the left auricle observed by fluoroscopic examination, which pulsated diastolic in time in the earlier observations. A diagnosis of aneurysm of the aorta would naturally be considered. But the fact that the pulsation was diastolic in time, and that roentgenological examination showed the mass to be unconnected with the aorta practically rules this out. The other condition which would give the above mentioned symptoms and signs is a neoplasm of the mediastinal region. In fact, such a diagnosis would account for and explain everything very well except for the fact that the mass pulsated. But one must not forget that a transmitted pulsation is not at all an impossible sign of a tumor. The final disappearance of the pulsation can be explained on the ground that the tumor had become more fixed as it increased in size. The question naturally arises as to whether the tumor was benign or malignant. The extremely slow growth, the absence of symptoms of invasion or metastasis were strongly in favor of benignness.

FIBROMA OF MEDIASTINUM.

No.	Age	Sex	Occupation	Area Involved	Chief Symptom	Diagnosis	Where Reported	Duration	Result	Remarks
1	42	F.	Housewife	Anterior Mediastinum	Face anxious, livid; edema and dyspnea.	Fibroma (?)	Pastau, Virch. Arch Bd. xxxiv, p. 236, 1865.	4 yrs.	Death	Original literature described an invasive tendency. More in the nature of fibro-sarcoma.
2	24	M.	School Teacher	Ant. and Mid. Mediastina	Pain in chest, dyspnea, hoarseness.	Fibroma (?) Lympho-sarcoma (?)	Fox, Lancet, Oct. 25, 1878, p. 577.	5 mos.	Death	Growth attached to cartilages of first ribs. Had invasive tendencies to left lung. All organs were imbedded in the growth at this region.
3	52	M.		Anterior Mediastinum	Pain and dyspnea.	Fibroma.	Wiedman, Schmidt's Jahrbucher, Vol. cxiii, p. 311.		Recovery	Caries of sternum.
4	50	M.		Anterior Mediastinum	Pain and emaciation.	Fibroma (?)	McDonald, Jour. de méd. et chir. et pharm., Vol. xxxvii, p. 454.	4 yrs.	Death	Symptoms simulated aneurysm. Original article not available.
5	61 (?)	M. (?)		Posterior Mediastinum	Pain, cough and emaciation.	Fibrous Thickening. Malignant (?)	Gull, Guy's Hospital Report, Ser. v, p. 307.	4 mos.	Death	No age, sex, duration or symptoms were given in Hare's series. Joseph J. was probably the case he meant. Lungs, vagus and plexus invaded.
6	—	—		Anterior Mediastinum			Oberstumfter, Jahrabericht über der Verwalkungd. medici., etc., des Canton Zurich, 13, 1884.		Death	The original article not available. Growth from sternum.
7	25	M.	Laborer	Anterior Mediastinum	Great dyspnea and cough.	Cellular Fibroma (?)	Barcley, Lancet, Feb. 21, 1864, p. 244.	9 wks.	Death	Duration only 9 weeks. Tumor itself reached cocoanut size. Numerous minute nodules in peritoneum. Probably fibro-sarcoma.
8	35	M.		Pericardium Middle Media		Fibroma Molle.	Kaufman, Lehrbuch der spec. patho. anat., Berlin, 1909.		Death	Three polypoid, fibro-edematous lobulated soft tumors, over the internal surface of fibrous pericardial sac.
9	62	M.		Pericardium Middle Media		Fibroma (?) Spindle Cell Sarcoma.	Legrand. Société patho. Bruxelles, 2 Mai, 1912.		Death	Tumor edematous and vascular, reddish, fleshy in color.
10	71	F.		Pericardium Middle Media		Fibroma.	Forni, Tumori, Anno iv, Fasc. v.		Death	Tumor the size of a three-year-old child's head situated over parietal pericardium.
11	52	M.	Chairman Board of Assessors	Anterior Mediastinum	Cough and dyspnea.	Fibroma Durum.	Shen.	2 yrs.	Death	Patient died of septicemia. Had coëxisting pulmonary tuberculosis.

Hare's Series

Forni's Series

The patient almost undoubtedly had a coexisting pulmonary tuberculosis. His steady loss of flesh and strength, his irregular fever, his low blood pressure and relative lymphocytosis, his repeated attacks of cold, his ischiorectal abscess and buccal abscess, and finally the finding in his right lung at autopsy were almost certainly manifestations of tuberculosis.

Surgical removal of the tumor was his only hope of permanent relief, and the character of the growth was such that the operation possibly could have been performed successfully.

Above is a chart of the recorded authentic cases of mediastinal fibromata, to which is added the one here described.

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FUNDAMENTAL CONSIDERATIONS IN THE TREATMENT OF THE PSYCHONEUROSES.*

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THE psychoneuroses may be defined as functional conditions of emotional origin, that interfere more or less seriously with the efficiency and health of individuals.

They include neurasthenia, hysteria, and possibly psychasthenia. They do not include true fatigue and exhaustion, nor organic conditions due to internal glandular disturbances, such as hyperthyroidism and the menopause. Nor do they include, according to some authorities, cyclothemia, hypochondriasis, nor psychasthenias with obsessing phobias and doubts of a non-emotional nature. Nor under hysteria is to be included mythomania—self-mutilation—which is more properly considered a true psychosis. Superimposed upon any organic condition, however, may exist psychoneurotic symptoms. The number of individuals suffering from the psychoneuroses, or from psychoneurotic symptoms, is admitted tremendously large. Treatment of these conditions certainly is rendered more efficient if some working hypothesis is held regarding the mechanism of their origin and action.

It seems justifiable to consider that the psychoneuroses which have been defined as functional conditions of emotional origin, involve a circle in which are included the mind, the autonomic and sympathic nervous center, glands of internal secretion, and the viscera—a circuit running from the brain to autonomic or sympathic nervous centers, sometimes to ductless glands, to viscera and back to the brain. Such a circle of impulses exists normally for every individual. But when the individual becomes conscious of the impulses returning from the viscera, and this consciousness starts a secondary series of impulses involving this same circle, the results may be considered to be a psychoneurosis. And the more numerous, complex, and long standing such secondary series become, the more firmly established and serious is the condition.

For example—a man crossing the street is nearly run down by an automobile. He jumps out of the way to safety. With his muscular action there is a quickening of the pulse, a deeper breathing, possibly his hair stands up a bit, he starts perspiring, and he feels a little faint. The normal man is scarcely, if at all, conscious of the activity of his vegetative system, and goes on his way without second thought of this physical reaction. The psychoneurotic, however, notices the palpitation of his heart, fears it is out of order, or going to stop beating. This secondary fright makes him so weak that he has to be carried home in a carriage perhaps, etc., etc., with one complication after another.

The hysteric, on the other hand, upon becoming more or less conscious of the impulses from his viscera, seemingly develops secondary symptoms involving, for the most part, the voluntary muscular system. He "loses control of himself" and can't stop doing, or can't do things that are ordinarily under his control—he can't stop crying, can't move his leg, can't feel his arm, etc.

In the Boston Psychopathic Hospital Out-Patient Clinic many psychoneurotic cases appear. Analysis of a series of 35 of these cases shows that 80% of them come to the hospital complaining of symptoms such as constipation, palpitation of the heart, weakness, easy fatigability, etc., which are physiological symptoms of fear. Study of these cases readily reveals in many cases definite fears—fears of going insane, fears of impotency, fears of approaching death, etc.

For example: A. B., an electrician, 40 years old, previously well, came to the hospital to find out whether he was going insane. He had been to his local physician who had looked him over physically and told him he was perfectly sound. The patient reasoned that if he were physically well he must be losing his mind, as he could not otherwise explain his symptoms which had incapacitated him for work. Some months ago he went to a private surgical hospital and was operated on for hernia. The operation was entirely successful, but a few days afterwards he sat up abruptly for the first time and felt faint. Never having been physically incapacitated in this way before, he concluded that he was about to die. He broke out into a sweat and felt "all in." Convalescence at the

* Read at the fall meeting of the New England Society of Psychiatry, September 26, 1916.

hospital continued without further trouble, but shortly after returning home he had another faint spell. Again he thought he was going to die. These spells became more common. He could not go back to his job.

C. D., a salesman, was accustomed to drink a good deal and smother his morning headache with bromo-seltzer. One morning the headache continued to be severe in spite of the medicine. The idea occurred to him that he had permanently injured his brain. He felt weak, had palpitation of the heart, constipation, headache, etc. He became unfit for work, and applied at the hospital, requesting to be sent away somewhere to prevent his going insane.

Both of these cases seemingly were suffering principally from fear symptoms, and both of them were greatly relieved immediately by learning the possible mechanism of the development of the condition.

This conception of the mechanism, so to speak, of the development of the psychoneuroses does not consider the etiology of these conditions, whether due to adequate stimulus or sufficient receptivity or both; nor what the quality, intensity or duration of the stimulus must be, nor whether the receptivity is congenital or acquired through disease or environment. But it helps us to understand why such varied and numerous forms of treatment have proved more or less effective in the treatment of these conditions. Some methods of treatment attack the problem from one point of the circle, others attack another point. Change of environment, isolation, and lessening or solution of environmental difficulties, tend to decrease the arousing of emotions. Hydro-, electro-, helio-, and mechanotherapy, massage, and surgical interference tend to modify the activities of the autonomic system and the glands of internal secretion. These same therapeutic measures, together with mechanical aids, such as belts, braces and posture exercises, tend to facilitate the activities of the viscera. Occupation and diversion tend to divert the individual's attention from his visceral symptoms and prevent some of the secondary circles of emotional activity from being formed. Rest, extra feedings, fresh air, general hygiene and drugs lessen irritability and tendencies to excessive reaction to stimulation. Hypnotism and suggestions also tend to prevent such secondary circles from being formed. Christian Science works along this same road. Psychoanalysis and psychotherapy, in so far as they help the individual to understand and properly appraise his symptoms, or, when merely occupation and diversion in a new disguise, are certainly of therapeutic value in arresting the formation of secondary emotional circles, but they are assuredly two-edged tools, and by augmenting introspection, and by stirring up quagmires without sounding or removing them, in many cases do as much or more harm than good.

In a recent text book on Diseases of the Nervous System, by eminent writers, these three statements appear within five pages of one another. " . . . in others still months of careful work are required." " . . . for the psychoanalyst should under no circumstances undertake to treat the physical condition." " . . . it is undesirable to have another physician treating the patient at the same time."

Few so-called normal individuals can get along for six months without an occasional somatic disturbance meriting attention. Is it to be questioned that psychoneurotics need at least as much physical care?

The proper treatment of the psychoneuroses should not consist in attacking the condition from a single point, whether that single point be by means of occupation, rest, isolation, hydrotherapy, surgery, drugs, electrotherapy, suggestions, psychoanalysis, or psychotherapy. It should consist in attacking the patient's vicious circle of emotional activity from as many different points as possible at the same time; and by a combination of efforts to lessen emotional activity, reduce irritability and rectify visceral activities, results can be hoped for that are not to be gained, or are gained only at great cost of time and labor, when treatment is confined to a single therapeutic measure.

DIABETES MELLITUS AND SYPHILIS.

BY JOSEPH H. BARACH, M.D., PITTSBURGH.

WHILE in a general way clinicians recognize a probable relationship between syphilis of long standing and diabetes mellitus, a résumé of the literature bears out the observation of Whartin and Wilson[1] that it is generally believed that the immediate relationship of these two diseases is rare. The investigations of these authors showed that at post mortem in practically all of the old syphilitic cases they found a pancreatitis local and patchy in character, while in some they found a pancreatitis severe and diffuse. All of their diabetic cases showed one or the other form of pancreatitis, but not all cases of syphilitic pancreatitis presented the clinical symptoms of diabetes mellitus.

From my own experience I am led to believe, as Whartin and Wilson contend, that the coincidence of syphilis and diabetes is not a rare one and deserves our full recognition. In going over the records of my private cases of the past 2 1-2 years, I find thirty-one cases of diabetes. Out of these, three were primarily cases of syphilis.

Two of these were referred to me by a syphilographer, Dr. T. L. Disque, and the third case came because of a tumor (gummata) under

his chin, which he suspected may be due to his former trouble, syphilis. Out of the twenty-eight remaining cases, one case, a physician, became infected with syphilis seventeen years ago and now has a strongly positive Wassermann. Another case was that of a man whose wife had syphilis and was treated for ten years, and the other, a woman, was the wife of a paretic, and herself gave evidence of a syphilitic infection. These six cases in which syphilis and diabetes were coincident therefore present themselves in two groups. Group A, in which the syphilis is in its active stages, and group B those presenting the clinical picture of diabetes mellitus and with that giving a history of or evidence of syphilis.

Group A.—

CASES OF SYPHILIS COMPLICATED BY DIABETES.

CASE 1. C. T. Age 24. Family history negative. He acquired syphilis thirteen months ago. Typical primary and secondary lesions. Wassermann positive. Six months later polyuria, polydipsia and glycosuria. Lost twenty-one pounds in last year. Ten months after infection alopecia areata, glandular enlargement, mucous patches and Wassermann positive. On the day previous to beginning of treatment his sugar output was 82.5 gm. With strict dieting and intensive specific medication consisting of mercury and salvarsan he has been sugar-free for three months. His tolerance now is 90 gm. bread daily, 5-10-15% vegetables, 60 gm. meat and fat in proportion. He is now at work and is progressing very satisfactorily. Moderate excess in diet causes a partial oxidation of Benedict's solution.

CASE 2. W. B. Age 41. Infected December, 1912. Wassermann positive. Typical case. Sugar and albumin found in urine January, 1914. He had been having an inordinate desire for candy and sweetened foods. Aside from the sugar patient had a severe albuminuria up to 3.5 gm. per li., Esbach's method. Strict diet instituted, improvement slow but steady. In April, 1915, after dietetic indiscretion, sugar output 13.68 gm. per day. Strict diet caused disappearance of sugar. On a diet containing 60 grammes of meat one day and eggs and fish on alternating days, about 120 grammes of bread 5-10-15% vegetables and fat as desired, avoiding sugar and sweetened foods, he has been able to keep sugar-free. Along with this his albuminuria has decreased to a mere trace. In his antisyphilitic treatment we have had to be cautious but persistent. He does not tolerate large doses of mercury. Iodides and neosalvarsan are tolerated well. After no specific treatment for three months, his Wassermann reaction is now negative, and I believe his sugar tolerance has improved.

CASE 3. H. E. Y. Age 48. Acquired syphilis seventeen years ago, irregular and inefficient treatment. Ten days ago noticed tumor under jaw, increasing in size, painless and hard. Incision by surgeon resulted in drainage of a small amount of bloody fluid. His Wassermann was strongly positive. Urinalysis shows 0.33% sugar. During past month lost six pounds weight, polydipsia and polyphagia.

Although a busy man he has acquired the habit of carrying candy in his pocket and always has a box of candy on his dresser. Low carbohydrate diet caused prompt disappearance of the sugar. Mercury, iodides and salvarsan caused prompt disappearance of the mass. This mass was the size of a large plum, and it disappeared within two weeks after treatment was begun and without a second incision. Progress of the case at present is very satisfactory.

GROUP B.—

CASES OF DIABETES WITH SYPHILIS IN THE BACKGROUND.

CASE 4. M. L. Y. Age 37. Nineteen years ago contracted lues, with that has been a heavy drinker. His treatment has been insufficient and irregular. Three months ago diabetes first discovered. Loss of nearly thirty pounds in weight, polyuria, polydipsia, polyhagia. Urine from 3000 cc. to 7000 cc. daily. Sugar output 47.52 gm. on day previous to beginning of Allen treatment. Physical examination shows the liver enlarged upward and three fingers' breadth below costal margin. Wassermann strongly positive. Sugar-free after forty-eight hours, fair carbohydrate tolerance, specific treatment being followed.

CASE 5. Mrs. A. K. L. Age 55. Her husband developed paresis ten years ago. After her husband went to the asylum patient had a "sore" at the base of her spine which lasted nine months. This was seven years ago, and she has never been well since. Three years ago an attack of "diabetic coma." Since the diagnosis of diabetes was first made she has lost thirty pounds in weight. Knee reflexes absent; pupillary signs negative; retinitis of right eye. Daily output of sugar varied from 3.0 to 75.0 gm. according to strictness of her diet, against which she was very rebellious. Fasting treatment was not attempted nor were we able to keep her on a low carbohydrate diet. She died in diabetic coma two years from the time I first saw her.

CASE 6. Mr. H. J. S. Age 40. Diabetes discovered two years and three months ago. Patient denied syphilis and refused a Wassermann, but his family physician had treated his wife for syphilis intermittently for ten years. No children. Physical examination shows liver enlarged and superficial lymphatic glands large. In two years patient lost twenty-five pounds; polyuria, polydipsia, polyphagia. Daily sugar output from 120 to 275 gm. He came under our observation irregularly and six months later died in diabetic coma.

While these last two cases are not proved cases of syphilis, their history has a certain value in this connection.

THE WASSERMANN REACTION IN DIABETES MELLITUS.

Richards[2] reported four cases of diabetes with marked acidosis giving a positive Wassermann, two cases of slight acidosis with a negative reaction, and one case of non-diabetic acidosis with a negative reaction. If the acidosis of diabetes were capable of producing complement fixation it would complicate the correct

diagnosis of syphilis in this class of cases. Later and more extensive investigations indicate, however, that the acidosis of diabetes is not responsible for the positive Wassermann.

Walker and Heller[3] found in eighty-nine cases of diabetes, seven with positive Wassermann, the majority of them giving a history of syphilitic infection. One case of diabetes developed six months after beginning of the infection and other parallel cases were observed. Walker and Heller claim that on repeated tests, under various conditions, the Wassermann reaction was noted to be uninfluenced whether there was much or a little sugar in the blood or urine, and whether or not the patient was in coma.

My own observation in fifteen diabetics, some of them having severe acidosis, showed no positive Wassermanns in the absence of syphilis.

CONJUGAL DIABETES.

Weber[4] reports three cases of conjugal diabetes in sixty, and Senator[5] claims that conjugal diabetes occurs in 1% of all cases. Beal[6] quotes Hofmeister, who has collected two hundred of such cases. Conjugal diabetes points as much to a common infection as to any other interpretation that we may place upon it. Conjugal paresis, recently discussed by Drysdale[7] is becoming recognized and is not at all rare. If the work of Rosenow is finally accepted, it will be that certain strains of spirochaete or other infective organisms possess a selective action or affinity for certain organs. Thus one strain will be known to be pathogenic for the nervous system and another for the eye and another the pancreas, etc. It seeems possible that conjugal diabetes may be the result of conjugal syphilis.

RÉSUMÉ AND COMMENT.

Here are recorded three cases of syphilis, in which the spirochaeta pallida is active and in which the clinical symptoms of diabetes mellitus have appeared. Such cases are supposed to be rare and the relationship of these two diseases is not generally recognized. Whartin and Wilson find post-mortem evidences which suggest that syphilitic pancreatitis is a comparatively common condition, and the above reported cases, as well as the cases referred to by Walker and Heller, show that diabetes not uncommonly follows syphilitic infection.

Cases 4, 5, 6 are reported for the purpose of contrast only, Case 4 presenting no external evidences of active syphilis, although the Wassermann is strongly positive. Cases 5 and 6, I fully believe, were syphilitic, but time and circumstances did not permit us to obtain positive proof.

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OBLITERATION OF LIVER DULNESS IN ACUTE PERFORATION OF THE STOMACH AND DUODENUM, WITH CASE REPORTS.

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IT is a well recognized fact that acute perforation of the stomach or duodenum into the free peritoneal cavity is a very serious calamity and, unless relieved by operation, usually ends in death in a few days. It is also well known that early operation yields a high percentage of cures, and late operation yields poor results, even when skillfully performed. It is, therefore, logical to conclude that early diagnosis—which, indeed, is the only diagnosis worthy of study—is essential to surgical success. It is also reasonable to conclude that anything which will aid in establishing an early diagnosis is worthy of thought.

The average perforation presents a typical picture and one that is easy to interpret—history of stomach disorder, then sudden, severe pain in the epigastrium, immediately followed by signs of spreading peritonitis which manifests itself by general tenderness and boardlike muscular rigidity, the points of maximum tenderness being usually in the epigastrium and over the iliac fossae, especially on the right side. This is the classical picture and when it is present there is no need of further aid to diagnosis.

All cases, however, are not so typical. The history of indigestion may be absent; the pain may not be of the superlative type; and, above all, the rigidity may not be boardlike and general. Ulcer perforation, acute appendicitis, acute pancreatitis, intestinal obstruction, mesenteric thrombosis and even severe, non-surgical bellyache must, at times, be carefully differentiated. In this extremity, any available sign that may aid us will be appreciated.

There can be no doubt that the older writers on perforation laid too much stress on manifestations which occur late—fluid wave, abdominal distention, and rapid and thready pulse. Obliteration of liver dulness was considered almost a *sine qua non*. Even Mayo Robson, whose opinions always command respect, writing in Keen's Surgery says: "Liver dulness is generally absent."

At the present time, the pendulum seems to have swung entirely the other way, and leaders in surgical thought tell us that this sign is of little or no practical importance, being rarely or never present.

At a recent meeting of the Chicago Surgical Society, C. L. Gibson read a paper on gastric and duodenal perforation. He makes this statement:

"This symptom (obliteration of liver dulness) I have never been able to recognize in

any perforation of any kind of the gastro-intestinal tract, and I feel that it is a great pity that it is allowed to remain as one of the possibilities of diagnosis."

In discussing this point, Dr. A. D. Bevan said:—"You cannot wait to find free air in the peritoneal cavity obscuring liver dulness. I have never seen a perforating gastric or duodenal ulcer with that sign."

Dr. Cubbins stated that this sign was present only in moribund cases with greatly distended abdomen and paralytic condition of the abdominal muscles.

Dr. Deaver also states that this sign possesses little practical merit, and it is unfortunate that it is mentioned as a diagnostic sign.

These statements should not be allowed to go unchallenged. While it is indisputable that too much stress has been placed on the importance of this sign in the past, it does, however, possess real value and is worthy of consideration and study.

My excuse for reporting the following cases, in addition to my report of June 8th, is not so much to put on record further evidence of the occurrence of this sign, as it is to point out that it may be *positive early even in the presence of boardlike rigidity and a retracted abdomen.*

The writer is fully conscious that there is great variation in the extent and character of liver dulness, both in health and disease; therefore, the examination should be carefully made and good judgment exercised in the deductions drawn.

CASE 1. June 4, 1916. Mr. G. Age 24 years. "Indigestion," at intervals, for period of 3 years. Seized, suddenly, with intense pain in the abdomen about three hours after supper. Seen by writer about 4 hours after the onset of symptoms—pulse, 108; temperature, 99°. Patient was lying on his back with legs drawn up. Complained of severe pain. There was boardlike rigidity of the abdominal muscles and the belly wall was retracted. Tenderness was marked throughout, especially over the pyloric region. Liver dulness was replaced by tympany, both in front and in the axillary region. This point was demonstrated to the patient, who was a fourth year medical student. He, as well as those present, were satisfied that there was no doubt about obliteration of liver dulness. Operation was immediately performed. On opening the peritoneum there was escape of considerable amount of gas and bile-stained fluid. An indurated ulcer, with perforation at the base, was discovered in the first portion of the duodenum. The opening was closed with chromic gut. One drain was inserted to the ulcer site and the abdomen was closed in layers. Convalescence uneventful. Discharged well in three weeks. Normal percussion over liver at time of discharge.

CASE 2. Aug. 17, 1916. Mrs. W. Age, 62 years. Stomach trouble for past 20 years. Past 5 years under medical treatment, most of time. Past year had lost weight and strength very rapidly and cancer of the stomach was suspected. Vomited several times daily, sometimes very large amounts, which contained food remnants of the day before. In the early morning was aroused from sleep by severe pain in the abdomen which persisted. Dr. W. J. Sheehan was called, who made the diagnosis of perforation. When seen by me the patient presented a fairly typical picture of this condition. Pulse, 96; temperature, 97.6°. The abdominal muscles were stiff but not rigid. There was general tenderness, which was most marked over the pyloric and right iliac regions. There was absence of liver dulness.

Operation was immediately performed (11 hours after perforation). On opening the peritoneum there was escape of air with a large amount of bile-stained fluid. The stomach was considerably dilated. A large perforated ulcer was disclosed at pylorus. The perforation was repaired and a posterior gastro-enterostomy with suture was performed. This was deemed advisable because of dilated stomach and long-standing history of gastric retention. Convalescence was uneventful. Has not vomited once since operation. Liver dulness normal on leaving hospital 18 days after operation. Has since been well.

SUMMARY.

1. The diagnosis of acute perforation can generally be made without the demonstration of free air in the peritoneal cavity, obliterating liver dulness.
2. In a certain percentage of cases, this sign may be a valuable aid to diagnosis.
3. Absence of liver dulness may be present early and with a rigid and retracted abdomen.
4. Instead of eliminating this sign as a diagnostic possibility, it should be given the consideration and study it deserves—and only that.

A STUDY OF THE X-RAYS OF CASES OF FRACTURE OF THE LONG BONES AT THE MASSACHUSETTS GENERAL HOSPITAL.*

BY RUSSELL F. SHELDON, M.D., BOSTON.

A STUDY of x-ray plates at the Massachusetts General Hospital was undertaken in order to determine the frequency of fractures and the line of fracture in certain of the long bones. There is no record of the age of the patient on these plates. They represent, roughly, the period from 1902 to 1914.

Each plate was studied in a good light, and the line of fracture and the position of the fragments were marked on a prepared card. All plates not in a good state of preservation or not successfully made were rejected.

The long bones of the lower extremity form the basis of the present report. There are 57

*Dr. Walter Dodd and Dr. George Holmes, Roentgenologists to the hospital, and Dr. Charles Scudder greatly facilitated this study.

fractures of the femur, and 405 fractures of the tibia and fibula.

The following table shows the seat of fracture in the 57 plates of fractures of the femur:

Head			1
Neck:	Impacted	5	
	Not impacted	5	10
Intertrochanteric			4
			15
Shaft:	Upper one-third	4	
	Middle one-third	31	
	Lower one-third	7	42
TOTAL			57

The study of the 405 plates of fracture of the tibia and fibula shows the seat of fracture to be as follows:

Upper end			
Tibia		8	
Fibula		1	
			9
Shaft			
Both bones		94,	or 23%
Tibia		32,	or 7.9%
Tibia, tuberosity		2	
Fibula		1	
			129
Malleoli or lower end			
Both bones		114,	or 28%
Tibia		44,	or 10.8%
Fibula		108,	or 26.6%
			266, or 65.4%
Multiple		1	
TOTAL			405

Of the 8 fractures of the upper end of the tibia, all entered the knee joint. The remaining case is a fracture of the upper end of the fibula, a rather unusual situation.

Of the 129 cases of fracture of the shaft of the tibia and fibula, division according to region is as follows:

	BOTH	TIBIA	FIBULA
Upper third	10, or 7.7%	1	0
Middle third	42, or 32.5%	26, or 20%	1
Lower third	42, or 32.5%	5, or 3.8%	0
Tuberosity	0	2	0
TOTALS	94, or 72%	34, or 26%	1

The 266 cases of fracture of the lower end of the tibia and fibula are best grouped as Pott's fractures. Thus of the 114 fractures of both bones, 111 are variants of the so-called Pott's type, the internal malleolus of the tibia being fractured, with the fracture of the fibula anywhere in the lower four inches. In the remaining three cases the fracture of the tibia is more extensive, for, in addition to the malleolus, a part of the lower end of the shaft is also fractured.

The 44 cases of fracture of the tibia alone, and the 108 cases of fracture of the fibula alone, were undoubtedly due to less severe trauma than the 111 cases of fracture of both bones. Thus, of the 44 cases of fracture of the lower end of the tibia alone, 40 involve the internal malleolus only. The remaining four cases involve more of the shaft, and may represent the type recently described by Cotton.

The 108 cases of fracture of the fibula alone show the line of fracture to be anywhere in the lower four inches of the shaft.

This study of the x-ray plates gives a definite impression of the frequency of the occurrence of fracture of certain bones. One ordinarily has a vague impression of the incidence of fracture of bone. Here is presented a positive picture.

Harvard Infantile Paralysis Commission.

THE HARVARD INFANTILE PARALYSIS COMMISSION AND ITS WORK IN MASSACHUSETTS.

BY ROBERT W. LOVETT, M.D., BOSTON.

THE Harvard Infantile Paralysis Commission was appointed in September, 1916, to furnish aid to the physicians in the neighborhood of Boston in the early diagnosis of the affection by laboratory methods and to place at the disposal of those physicians who cared to have it used, a supply of immune human blood serum which in the New York epidemic of the early summer had been extensively used and had been favorably reported on.

The commission consisted of Professor Milton J. Rosenau, assistant Professor Francis W. Peabody and the writer, with Mr. Roger Pierce as secretary.

Immediately after the formation of the commission there began a demand for its services in diagnosis and early treatment and this work was conducted under the supervision of Dr. Peabody. In October the commission was requested by the State Commissioner of Health, Dr. Allan J. McLaughlin, to act as the agent of the State Department of Health in supervising the after-care of the paralyzed children in Massachusetts. With the approval of the university authorities the commission consented to undertake this work. At the same time it became evident that another and most important aspect of the situation was in great need of study, and that the commission must also consider and investigate the question of the cause and prevention of the disease.

These three aspects of the question then constitute the activities of the commission. First, diagnosis and early treatment, under the immediate supervision of Dr. Peabody; second, the study of the etiology of the disease with especial

regard to its prevention, under the charge of Dr. Rosenau; and third, the after-treatment of paralyzed children, under the direction of the writer. Mr. Pierce has been concerned with the administrative and financial side of the various problems, and the commission has met frequently alone and with Commissioner McLaughlin to consider the various activities belonging to it.

In November, Dr. William H. Coon was secured as the administrative officer of the commission to correlate its activities, to supervise the many details arising in its work and to meet its most pressing present need in arranging for the after-care of patients.

The financial resources of the commission are very slender and wholly inadequate for any work of which Massachusetts will be proud. Thirty-five hundred dollars have been raised by private subscription. Six thousand dollars were anonymously contributed to maintain an adequate special clinic at the Children's Hospital for one year. Five thousand dollars were contributed for the use of the State Department of Health from the Governor's contingent fund.

It is obvious that if the work is to be adequately carried on it must receive adequate financial support. The four members of the commission receive no salary and for its various activities no charge is made. Overhead expenses are largely eliminated by the generosity of the Harvard Medical School, the Peter Bent Brigham Hospital, the Children's Hospital and the Massachusetts General Hospital. The money contributed to furnishing early state care is directly expended on this care and in few directions will a reasonable amount of money accomplish more direct relief.

The present paper will deal only with one of the three branches of activity, namely, the after-care of paralyzed children.

The following point of view with regard to the principles which should govern the modern treatment of this stage of the paralysis has been presented by the writer to the commission, and has by them been adopted as in general terms the plan to be carried out. It is as follows:

Infantile paralysis causes a motor impairment which in many cases limits normal activity and in others causes serious and lasting disability. The critical time is not in the first two or three months after the attack, but in the subsequent months up to the end of the second year, during which period the question of ultimate function in most cases is determined by the treatment received. Certain cases are so lightly affected that they will recover no matter what treatment is pursued, others are so severely paralyzed that no treatment is of much avail, but in the majority of cases treatment at this time has great effect on the final amount of restoration of power.

Neglect or ineffectual treatment during this time means unnecessary crippling and disability to so large a number of children that it is an economic blunder to allow it to happen, aside from any humanitarian aspect that the matter may have.

The state care of infantile paralysis was instituted in Vermont in January, 1915, and is still in force there. It was begun by the state of New York (exclusive of New York city) in October, 1916, and by Massachusetts, where the epidemic began later, in November, 1916. Various cities have established clinics for the care of these cases and various other communities have under consideration schemes of public care. The situation is too serious to be met by the ordinary agencies of relief.

The treatment of the acute stage of poliomyelitis is effectively and thoroughly carried out in a modern way by the practitioners of Vermont, New York, and Massachusetts, the states of which I have first-hand information. The later operative treatment of the disease is, on the whole, also modern, efficient and surgically sound as carried out by the competent orthopedic surgeons of the United States. The treatment of the convalescent stage of the disease (from the disappearance of the tenderness until two years after the outset) is practically about what it was thirty-five years ago, not having changed as has the treatment of the early and late stages. Massage, electricity, and braces are the methods of treatment most in vogue in the United States today during this stage.

The essentials of a modern treatment of this stage are, first, an accurate diagnosis which can be made only by a careful examination of every available muscle or muscle group in both arms, both legs, back, neck, and abdomen. This is a perfectly obvious requirement for accurate treatment. It takes time, care, anatomical knowledge, and skill. Second, the aim of treatment should be the development of affected muscles to their highest ultimate efficiency. The Vermont figures have shown that partial paralysis is nine times as common as total, when muscles are carefully examined individually. The affection is not therefore so often a hopeless loss of power as a muscular weakening. This lays stress on muscular development as the keynote of treatment. Third, the use of braces is conservative and protective rather than therapeutic, and the "brace treatment" of this stage does not exist any more than does a "crutch treatment" of fracture of the leg. Braces must be used in many cases to enable patients to go about, to prevent muscular stretching, and joint loosening, and to avoid deformity, but they constrict the muscles, they prevent normal use of the limb, and they are heavy. They should be worn during the first year only for walking and removed when the small amount of walking which is safe at this time has been done.

Fourth, fatigue is detrimental, easily induced and delays muscular recovery. The power of weak muscles may be permanently destroyed by

overuse, and unprotected overuse may result in muscular stretching and permanent deformity. The overuse of massage and therapeutic exercise is capable of inducing harmful degrees of fatigue. The physician who allows unrestricted walking with or without a brace in the first year takes on a heavy responsibility.

Fifth, massage is useful in proper dosage in preserving muscular tone, promoting circulation and preventing muscular atrophy. Its overuse is dangerous.

Sixth, electricity given with mild currents does no harm and perhaps good, but is not a powerful remedy, and its benefit has been denied by some writers. It has done much harm by being used over long periods of time, often none too carefully, during which no other treatment has been pursued and the parents have been deluded into the belief that proper treatment was being given while valuable time was being lost and permanent deformity being acquired.

Seventh, muscle development by muscle training is the important part of the modern treatment. Loosely given, it is harmful, because a child will inevitably use strong rather than weak muscles in a loosely formulated movement, and the person prescribing such exercises must have a sufficient knowledge of functional anatomy to formulate exercises calling only on the weak muscles. This knowledge is not as a rule possessed by the ordinary masseuse. Therein lies the chief obstacle to the general use of the method, the scarcity of persons sufficiently trained to prescribe proper exercises, and the formulation of such muscular exercises by persons not specially trained to give them effectively.

To embody these requirements in a practical scheme the following plan has been adopted by the commission.

Clinics are held in Boston and in other parts of the state where physicians may bring their patients for examination and free consultation. These clinics are so arranged that each patient receives as much time as is necessary for the thorough examination of the case and the formulation of treatment. Specially trained women are to serve in Boston and other parts of the state to assist the family physicians, if they wish it, in carrying out muscle training at home, in seeing that apparatus is worn if ordered, that fatigue is avoided, that the physician's directions are followed, and that the patients do not fall into the hands of fakirs.

So far as possible each family is enlisted in the responsibility of the case. When she is intelligent, the muscle training is taught to the mother and supervised by the nurse. Coöperation has been arranged with the District Nursing Association and other similar organizations whereby the follow-up work is distributed and the care assisted by them under the technical supervision of the commission's nurses.

The patients are instructed to return to the clinics at intervals suited to the individual case, but it is intended to make the home care the main feature of the scheme, and this plan is intended to cover a sufficient number of years to obtain final results.

It is desired to work only through the family physician, to assist and not to supersede him and to furnish him with the record of each case and suggestions for treatment whether or not he is present at the clinics.

The central clinic of the commission is held at the Children's Hospital on Tuesdays, Thursdays, and Saturdays at nine o'clock. With this clinic coöperates the Orthopedic Clinic of the Massachusetts General Hospital, held each morning at nine o'clock. To the latter clinic are referred all adult cases and patients from the north and west ends, East Boston, and Charlestown.

For groups of cases who cannot easily come to Boston, the Children's Clinic unit will be transported direct to such centres in the State as desire to have it, at the direction of the Commissioner of Health. Such clinics in out-of-town centres will be repeated at sufficient intervals to afford proper follow-up care. In these outside centres, just as in Boston, trained women will be assigned to the supervision of the treatment of such cases under the direction of the family physician. The service of the outside clinics and of the follow-up care is without charge. It is not the intention of the commission to attempt to establish clinics in any locality maintaining private clinics for the purpose.

The aim of the commission is to furnish to those physicians who wish it assistance in carrying out the modern treatment of infantile paralysis with the hope that by so doing the whole standard of treatment may be raised and that Massachusetts may hold as prominent a place in the therapeutic side of this disease as it already holds as a pioneer in the study of its etiology. For this purpose funds must be contributed, and it would be desirable if, so far as possible, independent schemes of relief might be correlated to the main enterprise.

Clinical Department.

A REPORT OF AN UNUSUAL CASE OF UMBILICAL HERNIA.

BY JOHN W. LANE, M.D., BOSTON.

THIS case is so rare and unusual and its outcome so satisfactory that I deem it worthy to report.

Mrs. B., seen June 27th, 1916, with Dr. Geo. P Morris of South Boston. There was nothing in

the family history to throw any light upon the case. The past history was negative, save for the fact that the patient had suffered for several years from a small incarcerated umbilical hernia.

The present illness began June 24th, and was ushered in by a severe pain in the mass at the umbilicus. This pain persisted until June 26th, when it suddenly ceased. During this time the patient vomited nearly twenty times, but whether the vomiting was faecal, was not known. On the evening of the 25th the vomiting ceased and there were several evacuations of the bowels following a dose of citrate of magnesia. On June 26th a redness and tenderness appeared about the umbilicus and the hernial mass disappeared. On June 27th the area of redness had extended, and was very much more tender.

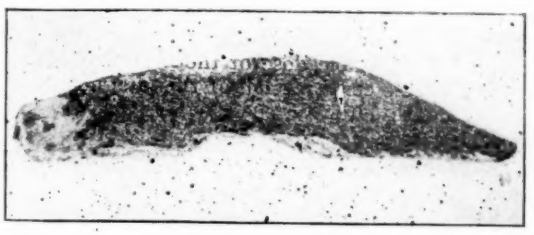
The physical examination showed a well developed, and rather stout woman, about fifty-two years of age. The examination was generally negative except for the abdomen. The abdomen was somewhat obese and was not distended but lax and tympanitic. There was no protrusion at the umbilicus but the depression, thereof, was unusually large and surrounded by an area of redness and tenderness and induration about six inches in diameter.

The patient entered St. Margaret's Hospital on the evening of June 27th, and was operated on the following morning under ether. As the greatest redness was below the umbilicus a vertical incision about three inches long was made below the umbilicus, and at a depth of 1 1-2 inches in the fat about two ounces of foul smelling pus was evacuated. The pus had an odor characteristic of an appendix abscess. After the excess pus had been wiped out, there appeared in the upper end of the wound a red mass about the size of a lemon.

On enlarging the wound this appeared to be the sac of a hernia with a rent about 1-2 inch in diameter. In the left lower border protruding from this rent was a sharp, hard, foreign body. The rent in the sac was slightly enlarged upward and a finger being introduced cautiously, came in contact with a loop of small intestine. The foreign body was seized in a hemostat and withdrawn and found to be a piece of animal bone, 1 7-8 inches long and 3-8 inches wide, as per illustration. Further inspection revealed a piece of small intestine strangulated in the sac, reddened but not gangrenous and showing a perforation of 1-4 inch in diameter, with its mucous membrane everted. The perforation in the gut was closed with interrupted plain cat gut sutures, in two layers. In the presence of so much infection it was not deemed advisable or safe to attempt a radical cure of the hernia, but the abdominal ring was enlarged slightly to relieve the strangulation and no effort was made to return the bowel into the abdominal cavity. Cigarette drains were placed around the sac and a large dressing applied.

The patient made an uneventful convalescence, save for a slight faecal discharge which entirely ceased by July 9th. On July 12th the patient was discharged from the hospital, the wound being clean and granulating and at the upper angle showing the mass of the sac almost on the level with the skin. On July 19th the patient's husband reported that the wound was almost healed and that she was out of doors taking a little exercise.

A report from the patient's physician, a few weeks ago, shows her to be perfectly well.



This case is unique almost, in that there was a perforation of a strangulated hernia by a foreign body. This foreign body was probably a piece of animal bone, looking more like a piece of spare rib. The patient had no recollection of swallowing any foreign body or of having any difficulty in swallowing at any time, yet it would seem almost impossible for her to swallow a piece of bone of such size without much trouble.

Another remarkable feature of the case was that the bowel practically disappeared within the abdominal cavity and in spite of the presence of so much pus, produced no general peritonitis.

RINGWORM OF THE SCALP AND ALOPOECIA AREATA APPEARING SIMULTANEOUSLY IN THE SAME LOCATION.

By John E. Lane, M.D., New Haven, Conn.

The following case is of some interest on account of its possible bearing on the explanation of the cause of some of the epidemics of alopoecia areata, which are occasionally reported.

I. C., an Italian boy, five years old, was seen for the first time at the Dermatological Department of the Yale University Clinic, on March 20, 1916. At the center of the nape was a bald spot, of about five centimeters in diameter, with a slightly irregular border. The skin was smooth, white and completely depilated, with the typical appearance of alopoecia areata in one of its favorite locations. A more attentive examination disclosed the fact that there was considerable scaliness of the border on the side of the spot towards the scalp. Some of the scales were removed and examined microscopically. In them were found large numbers of typical ringworm fungi.

The question then presented itself, whether this was a case of the not very infrequent "bald ringworm" (Liveling) or "tinea decalvans" (Tillbury Fox), or whether it was a spot of alopoecia areata

with a concomitant ringworn infection. I was unable to settle this point to my own satisfaction at this visit, but it was decided somewhat later by the course of the disease.

For a short time the spot increased a little in size and the scaly border and fungi disappeared with very little treatment in the course of a couple of months, and the spot began to be covered with hair again. This rapid cure of the ringworm without the development of any new areas, strongly suggested that the depilation which had taken place was due to the alopoecia areata, inasmuch as it was as efficient in curing the ringworm as an application of a suitable dose of the x-ray would have been. Complete confirmation of this diagnosis came about a month later, when a new spot of typical alopoecia areata appeared a little to the right of the location of the first spot.

Book Reviews.

The Essentials of Chemical Physiology. For the use of students. By W. D. HALLIBURTON, M.D., LL.D., F.R.S., Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London; author of "Text-Book of Chemical Physiology and Pathology. Ninth edition, with colored plate. London and New York: Longmans, Green & Co. 1916.

To those of us who received our first instruction in this little book, a new edition, including all of the advances in biochemistry, is extremely welcome. Holding a place between a quiz-compend and the larger and more extensive works on this subject, it fills a very active need of students.

The experiments to be performed are stated in very simple language, are not complex, and so complete that even a beginner without other knowledge than that of the use of chemical apparatus ought to be able to conduct them successfully. Organic chemistry, too, in so far as it is necessary for the understanding of biochemical processes, is quite fully treated. The aldehydes and ketones, the ethers, the amino-acids and aromatic compounds so commonly occurring in physiological processes are fully considered and clearly described.

The chapter devoted to fats contains all the newer information which we have acquired by investigations regarding the lipoids, galactosides and phosphatides.

The classification of proteins, which the author refers to as simply provisional, because we are daily learning more and more with reference to their structure, follows that adopted in the larger works. A very valuable chapter on foodstuffs is incorporated in the volume, which contains a brief but accurate report on the progress of our knowledge of vitamins.

In a work, however, which is supposed to be devoted to biochemistry, the description and plates of glands producing the different secretions seem out of place and indicate that the author is primarily a physiologist.

The chapter on blood is rather brief and contains practically none of the newer investigations which have been conducted on the importance of variations of the amount of urea, uric acid, sugar, and creatin, which are revolutionizing our methods of testing for pathological changes in the body by means of the blood.

On the whole, we may regard this work as playing a very important part in the instruction of students, but rather too brief for the needs of anyone engaged in a thorough prosecution of any line of investigation.

Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes. By CHARLES A. ELSBERG, M.D., F.A.C.S., Professor of Clinical Surgery at the New York University and Bellevue Hospital Medical College; Attending Surgeon to Mount Sinai Hospital and to the New York Neurological Institute. With 158 illustrations, three of them in colors. Philadelphia and London: W. B. Saunders Company. 1916.

An attractive book of 300 pages, profusely and most liberally illustrated; easy to read, because of large type and wide spacing; easy to hold, because it is not too bulky; and interesting from cover to cover, because, as Dr. Elsberg says in his preface, the "volume is a record of personal experiences in the surgical treatment of diseases and injuries of the spinal cord and its adnexa," and because he has limited himself rigidly to "a consideration of the diagnosis and treatment of diseases of the spinal cord that may require surgical interference."

We have referred to the illustrations: there are no less than 150 of them; many half-tones; many excellent reproductions of x-ray plates; a number of diagrams, and two admirable colored plates illustrating the difference between the spinal veins in inflammation and the spinal veins in compression. The illustrations, as a rule, take half a page, and occasionally a whole page, so that the text is not more than 200 pages, and probably less. Emphasis is laid upon this fact, because the tendency at present seems to be to make medical books too long: either the writer over-elaborates his subject, or else he does not remain in the field which he originally set for himself. Dr. Elsberg avoids both these dangers; he speaks with highest authority and from a very wide experience; his book is unlike anything heretofore published in America, and it should be in the hands of every surgeon who may be called upon to explore the spinal cord.

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WORK OF THE HARVARD INFANTILE PARALYSIS COMMISSION.

PARTICULAR attention is directed to the article by Dr. Robert W. Lovett, published in this issue of the JOURNAL, describing the work already accomplished by the Harvard Infantile Paralysis Commission in Massachusetts and its plans for the future, and also to the note on the same subject published in another column. The promptness with which this commission was organized and the efficiency with which it has set about and already carried out its duties are a credit not merely to the profession, but to the public spirit and farsightedness of the university in its organization. The immediate task of the commission is, during the succeeding months, to reach and undertake the care, or to give advice in its maintenance, of the residual paralysis left in the community of this Commonwealth by the epidemic of last summer and fall. The duty of the commission, however, will not cease when this is accomplished. Indeed it seems that its early and immediate success justifies the wish and expectation that it may remain as a permanent body to serve as a clearing house and center for the investigation and control of the disease during subsequent epidemics that are likely to occur until the discovery of its exact mode of transmission shall place it in the category of completely understood and preventable diseases. Subsequent publication of the complete proceedings and accomplishment of this commission should prove a valuable and historic contribution to the literature of medical science.

INDUSTRIAL HEALTH INSURANCE.

SINCE the publication of its issue of December 21, 1916, devoted to the subjects of Workmen's Compensation, Industrial Health Insurance and Social Legislation, the JOURNAL has received and printed with pleasure a number of communications criticizing unfavorably not only the subject material of this issue, but also the editorial policy which it then assumed. To these communications the attention of readers is particularly directed, since they afford very valuable contributions to that discussion of the subject which is desired by the JOURNAL in the interests of the medical profession, and the most effective means for determining the attitude of the profession at large on this important subject. Since the writing of several of these contributions, especially those opposing the Doten bill, which was published in our issue of Dec. 7 by special request of the health insurance committee of the Middlesex South District Medical Society, the JOURNAL has editorially noted that this bill in any event is generally considered, even by the proponents of health legislation, unsatisfactory in its medical provisions and will not be brought before the coming General Court unless in radically amended form. Not only is the subject under careful consideration by the Massachusetts Commission on Industrial Insurance, but the general committee of the Massachusetts Medical Society on state and national legislation and a special committee on Workmen's Compensation are engaged in active sessions for discussion of the subject and formulation of a definite plan of action.

Meantime in New York the council of the Medical Society of the State of New York has endorsed the provisions for medical benefit in a

new draft of an act for health insurance prepared by the American Association for Labor Legislation. The council states its belief that these sections "safeguard the public interest, the public health and the welfare of the medical profession," and has instructed its committees on medical economics and on medical legislation to act accordingly.

The new sections specifically provide for a state medical advisory board to be elected by the state medical societies and to include in its membership the state commissioner of health as an *ex-officio* member. With its powers to pass upon regulations issued by the State Commission affecting medical benefit, and to hear and report upon disputes appealed to the commission, this advisory board will reflect the viewpoint of both the department of health and the medical profession. In local matters, much the same advantages accrue from the local medical committee which discusses local medical regulations before they are made effectual by the directors of the local fund, and hears cases of disagreement relating to medical benefit. The representation on this committee of different groups—health department, general practitioners and specialists—is a foresighted measure for the maintenance of a just balance among the varying medical interests. The appointment of a delegate from the health department to this committee is an important provision since it secures the correlation of health insurance with the public health work.

Profiting by European experience, provision has been made for separating the two distinct functions of certifying an insured person as eligible for benefit and of actually treating him. Medical officers, not permitted to practice under the act, alone have authority to issue certificates of disability after the attending physician has recommended such action. The suggestion that the health department furnish these medical officers has been rejected as impracticable. Instead, the qualifications of candidates for such positions are to be set by the medical advisory committee elected by the state societies, while the actual appointments will be made by the local boards, subject to the veto of the local medical committee. It seems just that the local boards exercise control over the medical officer and have power to dismiss any who may prove negligent in passing upon claims of persons whom physicians have recommended for cash benefit. Moreover, the power to be exercised by the local medical committee should assure that the medical officer will have the support and confidence of those with whom he will be associated.

The advantages claimed for this new draft of the Health Insurance bill in New York are, that it makes health insurance universal for all manual workers and for others earning $100 or less because experience elsewhere has shown that voluntary insurance will not reach the persons who most need its protection and that insurance must be obligatory if it is to render the large social service of which it is capable. It is believed that the distribution of the cost of the benefits and of their administration is equitable. This administration, however, we firmly believe should be vested in mutual associations comprising representatives not merely of employers and employees but also of the state and of the medical profession. The welfare and working conditions of physicians are so importantly affected by any scheme of health legislation that not only should they be collectively represented in its formulation and administration, but the ultimate working of the system should be in some way efficiently correlated with the control of state and local health departments. The experience of an adjacent state, such as New York, in dealing with these problems, should be attentively watched by physicians in order that the medical profession of Massachusetts may profit by it in determining its own course of action.

A TRILOGY OF HEALTH REPORTS.

WE have recently received, almost simultaneously from Washington, the annual reports of the Surgeons General of the United States army, navy and public health service for the year 1916. This trilogy of health reports deserves simultaneous comment and comparison.

In the issue of the JOURNAL for December 14, 1916, (Vol. CLXXV., p. 875) we commented editorially at some length on the then recently published annual report of the Secretary of the United States Navy, calling attention particularly to its sections dealing with health and sanitation in the navy.

These subjects are expanded and elaborated in the report of the Surgeon General, Dr. W. C. Braisted, who, in addition, comments on the fact that, despite the employment of venereal prophylaxis, the total admission rate for these diseases has shown but little change over the preceding years.

The report of the Surgeon General of the United States Army, made by the acting Surgeon General, Dr. H. P. Birmingham, covers a study of the health and sanitary conditions of the army for the year 1915, and therefore does not include the data and comment connected with the mobilization of the Army and National Guard at the Mexican frontier last summer. During this period the general health of the army was excellent and there were no epidemics or unusual incidence of infectious diseases. The death rate of the entire army for 1915 from all causes was 4.45 per thousand compared with 4.4 for 1914, which was the lowest mortality rate in the army for many years. There were only eight cases of typhoid fever in the entire army during the entire year and among these there were no deaths. A brief account is given of the punitive expedition into northern Mexico in March, 1916, during whose several months of arduous service under trying climatic and unsanitary conditions a remarkable record of health and efficiency was maintained. The noneffective rates of this force compared favorably with the best of home troops under garrison conditions. A brief note is also appended relative to the mobilization of the National Guard in June, 1916, which will be more completely considered in the annual report of next year.

The annual report of Dr. Rupert Blue, Surgeon General of the United States Public Health Service, covers the activities of that service for the fiscal year ended June 30, 1916, being the forty-fifth annual report of the service and the 118th year of its existence. As heretofore these activities have been conducted under the six bureaus of scientific research, foreign and insular quarantine, domestic quarantine, sanitary and statistics, marine hospitals and relief and personnel and accounts. Especial attention is devoted to the work of the service in the diminution and eradication of preventable disease.

"Practical application of the knowledge that pellagra is caused by restricted diet and that it may be prevented and cured by a properly balanced ration has resulted in the last year in material reduction of the affliction in all parts of the country. The service believes that in another year even more marked improvement will be observed.

In eradicating trachoma, likewise, much success has been obtained. During the year 1700 persons were operated upon for the relief of partial or complete blindness, nearly 2000 received hospital treatment, while more than 19,000 were treated at hospital dispensaries and clinics. The total cost of this, including remodelling of buildings and every expense in connection with feeding and care of patients, was less than $39,000 for the year.

Increased interest was shown by the government in health of rural dwellers. During the last three years 80,270 homes in thirteen States were visited and complete sanitary surveys made. In every instance definite recommendations were given to remedy such evils as pollution of wells, presence of disease-bearing insects and improper disposal of excreta. In addition 22,234 homes were revisited, mostly at the request of the owners, in order that the government agents could inspect improvements instituted. This method of teaching sanitation has been followed by a marked reduction in prevalence of preventable diseases.

Considerable attention has been given to health of school children, especially in rural districts. Over 32,000 children had determined their mental status and the causes and percentage of mental retardation and deficiency. In addition 7,000 physical examinations were completed to determine physical defects.

Health of industrial workers has been safeguarded to a greater extent than ever before. Studies have been made of the occupational hazards of steel workers in many leading industrial establishments and insanitary and harmful conditions have been corrected. In the zinc mines of Missouri, methods have been adopted which should go far toward eradicating tuberculosis from that district.

Surveys of the Atlantic coast and New England watersheds have been completed and the extent and effect of their pollution is now known. This knowledge, says the report, demonstrates that Federal legislation to prevent contamination of water sources is necessary. Better provision for health of travellers has been obtained by safeguarding water supplies of common carriers and by promulgating regulations governing transportation of persons having communicable diseases.

Efforts have been made to prevent introduction of all communicable diseases. Typhus fever has been combated on the Mexican border and disinfection plants established where the clothing and persons of all incoming aliens have been disinfected. At El Paso, Texas, 26,000 persons were disinfected.

Plague eradicative measures at New Orleans have been continued. Over 371,000 rodents were trapped or killed and more than 100,000 were examined. No human case of the disease has occurred during the year. Measures for the control of typhoid fever, Rocky Mountain spotted fever and malaria and other infections have been continued heretofore. In only a single field, the surgeon general reports, the medical inspection of immigrants, has the work of the service shown any diminution during the year. This has been compensated for by the

more thorough examination accorded; 481,270 aliens being examined to determine physical and mental defects. Of these 16,327 were certified for deportation, proportionately a greater number than has ever been recorded. The percentage of mental defectives certified is also steadily increasing."

MEDICAL NOTES.

DEATHS FROM WILD ANIMALS IN INDIA.—It is not generally realized how large a number of deaths is caused annually in India by wild animals. Report from Simla on November 30 states that during the year ended June 30, 1916, 26,385 persons died in India from snake bite, an increase of 3700 over the previous year. Over 2000 more deaths were caused by elephants, tigers, and other animals.

"During the past five years elephants, tigers and other animals have killed 9192 people in British India, and, of these, tigers have claimed a total of 3682. In the same period 116,828 persons have died as the result of snake bites.

Last year the highest total of deaths due to animals in any one province was in Bihar and Orissa, where 684 people lost their lives, tigers alone accounting for 376. In the United Provinces one man-eating tiger in the Almora district killed ten persons out of the provincial total of twenty.

In order to effect the destruction of as many wild animals and snakes as possible, the Government pays bounties. The number of animals destroyed in 1915 was 25,036, including 1582 tigers, 6623 leopards, 2775 bears and 2191 wolves. The total number of snakes killed was 184,663."

EUROPEAN WAR NOTES.

MEDICAL STUDENTS IN AUSTRIAN UNIVERSITIES.—Statistics recently published show that during the summer semester of 1916, the number of students in the principal Austrian universities was as follows: Vienna, 3472; Prague, Czech University, 1891, German University, 638; Cracow, 1281; Lemberg, 1174; Graz, 647; Innsbruck, 584. At both Vienna and Graz 30% of the number were medical students; at Vienna nearly 40% of these medical students were women.

COÖRDINATION OF WAR RELIEF WORK.—At a meeting held in New York on December 27 it was planned to coördinate the relief work done by American organizations in belligerent European countries in the hands of a general governing body and to initiate a movement to secure a fund of $100,000,000 for its work. A committee on organization for this purpose was appointed by the representatives of twelve philanthropic organizations concerned.

"John M. Glenn, director of the Russell Sage Foundation, was one of those appointed to the committee. Others were Dr. Charles B. MacFarland, general secretary of the Federal Council of the Churches of Christ in America; Miss Fannie Hastings, secretary of the Serbian Relief Committee: C. V. Vickery, executive secretary of the American Committee for Armenian and Syrian Relief, and Dr. Frederick Lynch of the Fund for Starving Children.

It was evident from the character of the organizations represented at the meeting that the movement to federate war relief is being fostered by powerful agencies and will be brought to a successful conclusion, if the many interests achieve harmonious relations.

Following are some of the organizations: American Relief Committee for Widows and Orphans of the War in Germany, John D. Crimmins, treasurer; B. F. B. Permanent Blind Relief War Fund, Frank A. Vanderlip, treasurer; the Fund for Starving Children, Frederick Lynch, treasurer; the American Huguenot Committee, Edmond E. Robert, treasurer; Commission for Relief in Belgium, Alexander J. Hemphill, treasurer; East Prussian Relief Fund, Subert Cillis, treasurer; Joint Distributing Committee, consisting of American Jewish Relief Committee, Central Relief Committee of America, Murray E. Coggeshall, treasurer; Union Nationale Des Églises Reformées Evangéliques de France, Emergency Relief Fund, Alfred R. Kimball, treasurer; Polish Victims' Relief Fund, Frank A. Vanderlip, treasurer, and the Federal Council of the Churches of Christ in America."

NEEDS OF AMERICAN RED CROSS IN EUROPE.—The American Red Cross has recently issued a statement indicating the particular needs for articles of relief in the various belligerent European countries as follows:

"Albania and Montenegro—Money contributions are needed for civilian relief, to be used as soon as the opportunity for administering relief presents itself.

Armenians and Lithuanians—The Armenians in the Caucasus can be reached at Tiflis via Archangel or Kola. The Christmas ship which just sailed for Beirut carried a good supply for the Armenians in Syria. Supplies can be forwarded to the Lithuanians by way of Russia. The greatest present needs are for new warm clothing, blankets and drugs.

Austria, Bulgaria, Germany and Turkey—Supplies cannot be forwarded to the Central Powers at the present time on account of the British blockade.

Belgium—The headquarters of the Belgian Red Cross are at Calais, so that supplies are

forwarded via France. Among the most urgent needs are surgical dressings, pajamas, underwear, children's clothing, and foodstuffs.

England—A letter has just been received from the British Red Cross asking for pajamas, socks, sheets, pillows, and absorbent cotton and gauze in bulk.

France—The following supplies have been asked for in recent cables from Paris: Rubber gloves, hot water bottles, invalid rings, rubber sheetings, pajamas, ether, absorbent cotton, surgical gauze and underwear.

Italy—Urgent requests from the American Relief Clearing House, Rome, and from the Italian Red Cross include the following: Rubber gloves, sheets, cushions, rubber hot water bottles, bandages, absorbent cotton, and clinical thermometers.

Poland—Money contributions are the most acceptable, because it is impossible to get supplies into Poland.

Roumania—Supplies may be forwarded by way of Russia, and the most urgent needs include the following: Chloroform, iodine crystals, rubber gloves, adhesive plaster, hypodermic syringes, ligatures, and sutures, needles, and all kinds of surgical dressings and bandages.

Russia—The greatest need in Russia is for drugs and medicines, but hospital supplies and hospital garments can be used in large quantities.

Serbia—Supplies for the Serbians are now going via Marseilles, and then trans-shipped to Salonica.

Siberia—Warm underwear, socks, sweaters, drugs and medicines are the special needs among the prison camps in Siberia.

Syria—Money contributions only should be made for Syrian relief.

The following note as to the method to be followed in making Red Cross gifts is appended to the statement:

The American Red Cross will deliver, without further cost to the donor beyond delivery to the Bush Terminal, any amount of supplies, large or small, to the National Red Cross of the country for which they are designated or to any other recognized relief organization in the war zone. Funds donated for special objects will be administered accordingly.

All funds should be made payable to the American Red Cross and mailed to 1624 H street, N. W., Washington, D. C. All supplies should be sent prepaid to the American Red Cross, Bush Terminal, Brooklyn, N. Y., and a letter covering cash shipment mailed to the American Red Cross, 1 Madison Avenue, New York City."

PROVISION FOR CARE OF CANADIAN SOLDIERS.—Report from Halifax, N. S., on January 2 states that owing to the present overcrowded condition of military hospitals in Great Britain, it is impossible to care adequately for wounded Canadian soldiers there. Accordingly it is planned to increase hospital facilities in Canada for this purpose.

"The Military Hospitals Commission already has arranged for the conversion of one of the large piers of the new steamship terminals into a clearing hospital with a capacity of 450 beds.

Under the direction of Capt. Symons, chief engineer of the commission, a force of 40 workmen has been started on night and day shifts to hasten its completion.

Other structures nearby are being inspected to determine their availability for similar purposes. As the new hospital is to be a clearing institution, it is understood that others will be arranged in different parts of the Dominion, to which patients may be forwarded."

WAR RELIEF FUNDS.—On Jan. 6 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	$226,811.47
French Wounded Fund	177,170.79
Armenian Fund	136,548.91
Serbian Fund	106,302.51
French Orphanage Fund	73,769.29
Surgical Dressings Fund	59,619.62
Polish Fund	57,096.30
LaFayette Fund	21,554.03
P. S. D. Fund	10,585.18
French Phthisis Fund	7,489.50
French Musicians' Fund	976.47

BOSTON AND NEW ENGLAND.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Saturday noon, Dec. 30, 1916, the number of deaths reported was 259, against 393 for the same period last year, with a rate of 17.72 against 27.38 last year. There were 29 deaths under one year of age, against 63 last year, and 76 deaths over 60 years of age, against 127 last year.

The number of cases of principal reportable diseases were: diphtheria, 76; scarlet fever, 30; measles, 45; whooping cough, 2; tuberculosis, 29.

Included in the above were the following cases of non-residents: diphtheria, 28; scarlet fever, 13; measles, 1; tuberculosis, 3.

Total deaths from these diseases were: diphtheria, 5; tuberculosis, 29.

Included in the above were the following deaths of non-residents: diphtheria, 1; tuberculosis, 2.

CHICKERING HOUSE.—The Dedham Temporary Home for Women and Children, called Chickering House, has recently issued its annual report for the year 1916. It states that the House has been filled to its capacity and that repairs and

additions have been made during the year to improve the condition of the buildings and increase space wherever possible. These expenses, with the added cost of food and wages, have made imperative added subscriptions, and it is to be hoped that the many friends of this most worthy and useful home for convalescents will support it in the manner it deserves. Subscriptions and donations may be sent to Miss Annie E. Wilson, 161 Harvard Street, Brookline.

CAMBRIDGE TUBERCULOSIS HOSPITAL.—On January 1, the new building of the Cambridge Tuberculosis Hospital was formally opened for inspection and patients were transferred to it on January 8.

"It is a brick structure of the Georgian type. The administration section is in the center of a wide courtyard facing due south and inclosed by projecting wings. In each of these wings are two wards of 10 beds each, two small wards of two beds and a single ward. Connected with these wards are diet kitchens, equipped with the latest devices. A complete signal system runs from each bed and from each ward to the various parts of the building. Wide piazzas, upon which beds can be rolled, enable the patients to pass much of their time in the open air. At the end of the wings is a solarium. The second floor of the wing is similar to the first floor."

AESCULAPIAN CLUB.—Invitations are issued for the midwinter dinner and meeting of the Aesculapian Club, which will be held at the Harvard Club on Saturday, January 13, 1917, at 9 p.m. There will be an address by Prof. William H. Welch of Johns Hopkins University on "Pathological Anatomy and Its Relation to the Development of Medicine." Preceding the meeting, the midwinter dinner for all members of the Club will be held at the Harvard Club at 7 p.m.

MASSACHUSETTS COLLEGE OF PHARMACY.—It is announced that the anonymous gift of $250,000 to the Massachusetts College of Pharmacy, recently reported, is from Mr. George Robert White of Boston. Work on the new building of the College, at the corner of Longwood Avenue and Worthington Street, will now be immediately begun, and it is expected that the structure will be complete and ready for occupation by December 1, 1917.

"The building will cover an area of 75,000 square feet.

"The exterior will be renaissance in character, with an imposing central Ionic portico of six columns of limestone, each 28 feet high, approached by a monumental flight of granite steps. The lowest story will be constructed entirely of heavy rusticated limestone, and will carry two stories of red brick laid in broad joints with cornices, window frames, etc., of limestone. The front wall will be set back 80 feet from the line of Longwood Avenue, giving an opportunity for an approach by an esplanade paved with large slabs of stone.

"The ground floor is devoted mainly to two laboratories, the pharmacy laboratory 65 x 62 feet, and the chemistry laboratory, 62 x 58 feet, each 15 feet in height and having accommodations for about 400 students. In connection with these are the balance room, stock rooms, offices for the professors, and a general room for men students.

"The main floor contains two lecture rooms, for pharmacy and chemistry, respectively, each with accommodations for 300 students at a sitting, with adjacent offices for the instructing staff, and in addition, a monumental main rotunda, vestibule and staircase with floor of honed limestone and walls of Roman travertine, in which are placed tablets of purple Lepanto marble for inscriptions.

"From this corridor are the general offices, with the dean's office adjoining, the library, a homelike room suited for comfortable study and free from any institutional appearance, the trustees' room, panelled to the ceiling in quartered oak with architraves and chimney piece of verde antique marble, and large and pleasant quarters for the young women students. Check rooms, store rooms, public telephone booths and all other accessories are to be on this floor.

"The main staircase leads to the George Robert White hall, a beautiful assembly room with a seating capacity for 500, finished and panelled in chestnut with a stucco ceiling and a great stone chimney piece. At the head of the stairs will be a capacious foyer for the convenience of the audience during intermissions. In connection with George Robert White hall there are provided a buffet, a room for storing seats, ante rooms, facilities for illustration by films, etc. The top floor also contains the materia medica and biological laboratories, an alumni room, three classrooms and ample storage facilities.

"Concrete exit stairways in towers run from top to bottom of the building. The entire construction is to be fireproof with steel window sashes and terra cotta and steel floor construction. The equipment, including an air washer, a fan ventilating system with thermostatic control, complete telephone system, indirect lighting and site, will represent an outlay of over $500,000."

HARVARD INFANTILE PARALYSIS CLINICS.—In previous recent issues of the JOURNAL we have noted the establishment by the Harvard Infantile Paralysis Commission of a Boston Clinic for the after-treatment of convalescent cases of poliomyelitis. A second clinic for this purpose has now been established at the Anna Jacques Hospital, Newburyport, which will hereafter be

a center for this work in northern Essex County.

"The commission is acting in full coöperation with the State Department of Health, and the work is unique in that it is the first instance in the country of a great university branching out in the work usually done by a state university. A clinic is in operation at the Children's Hospital under the direction of the commission, being open each week on Tuesday, Thursday and Saturday, while one at the Massachusetts General Hospital has already been established for children of the North, East and West Ends and Charlestown, and for adults from all over the State.

"The commission is composed of Dr. Robert W. Lovett, professor of orthopedic surgery at the Harvard Medical School, chairman; Dr. M. J. Rosenau, professor of preventive medicine and hygiene at Harvard; Dr. Francis W. Peabody, of the Peter Bent Brigham Hospital, and Mr. Roger Pierce. Arrangements are now being made whereby the Boston unit of the commission, composed of doctors and nurses who are experts in caring for paralysis cripples and prescribing corrective exercises and treatment, may go to various centres and return to Boston.

"The procedure of the commission is to communicate with private physicians, with paralysis patients, by means of workers, and tell them of the advantages the clinic offers with its experts, and that, with the consent of the physician, the child will be treated. If the doctor consents, notes are taken of the child's condition and given to him with suggestions.

"At the clinics, the patients are examined carefully, in order to discover what muscles are affected. If the attending physician is present, advice is given him immediately; if not, the information is mailed to him. In every case, nothing is done without the consent of the attending physician, and he is at perfect liberty to disregard any or all advice given him. The work is entirely one of coöperation between the University and the State for the alleviation of suffering, as far as possible.

"The State Department, through Dr. Allan J. McLaughlin, commissioner of health, gives all of its numerous facilities to the commission, while the latter gives its expert knowledge to the State. Clinical work of this sort has been given in Vermont, and is now being given in New York State, but Massachusetts has the distinction of being the first state to show such a great university coöperating with it.

"Nurses from any part of the country wishing instruction in diagnosis and care of paralysis patients, may attend clinics, and many are doing so. The commission has also been active in research work and in care of cases in their acute stages."

MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.—At the recent annual meeting of the Massachusetts Society for Mental Hygiene, the following were elected directors for the ensuing year: Chief Justice Arthur P. Rugg, Miss Alice P. Tapley of Boston, President Herman C. Bumpus of Tufts College, Dr. Austen Fox Riggs of Stockbridge, Frank C. Richardson of Boston, Miss Ada M. Fitts of Boston, Dr. F. W. Anthony of Haverhill, State Health Commissioner Allan J. McLaughlin, Dr. Milton J. Rosenau of the Harvard Medical School, Dr. Walter E. Fernald of the Massachusetts School for the Feebleminded, Dr. George M. Kline of Boston, and Judge William T. Forbes of Worcester.

SMALLPOX IN WATERBURY.—Report from Hartford, Conn., on December 19, states that smallpox was, on that date, mildly epidemic in Waterbury, where 107 cases had been reported.

BOSTON HEALTH UNITS.—About a year ago the first Boston Health Unit was established on Blossom Street in the west end of this city. The experiment has been so successful that it has been recommended to the Boston Health Department to establish another similar unit on Meridian Street, East Boston.

DISTRIBUTION OF BOSTON CASES OF POLIOMYELITIS.—"The Boston Health Department has reported that sanitary conditions and density of population do not seem to be factors in the incidence of infantile paralysis. In the North End, with a population of 36,000, or 122 persons to the acre, only 17 cases were reported during the recent epidemic, whereas in the West End, old Ward 8, population about 33,000, or 189 persons to the acre, 46 cases were reported. Brighton, with a population of about 27,000, or nine persons to the acre, had only nine cases. East Boston, Ward 1, population about 24,000, had 25 cases, while Ward 2, in the same district, population 42,000, had 56 cases. Ward 23, population about 22,000, had nine cases, while in the Hyde Park district, Ward 24 adjoining, population about 23,000, 41 cases were reported.

"Although this outbreak was fought along the lines of a distinct communicable disease like diphtheria, scarlet fever and typhoid fever, it is a question if the hospitalization of cases helped to diminish the incidence of the disease. Of the total number of cases reported, 642, as many as 420 were removed to the hospitals. The theory, generally accepted by health officers, that the disease is spread by human carriers, needs further proof before it can be accepted."

ACIDOSIS IN WATERTOWN.—It will be remembered that almost exactly a year ago, there was a brief epidemic of acidosis in and about Boston, causing the death of a number of children. On December 20 a death from this cause was reported at Watertown, Mass., where the first similar case occurred last year.

Obituary.

FRANCIS J. KEANY, M.D.

1866-1916.

THE death of Dr. Francis J. Keany has created a void in the medical and lay community, that will be difficult to fill. The Boston City Hospital has sustained a serious loss, while his friends have been bereaved of a staunch comrade.

Dr. Keany was characterized by a broad catholicity of taste and a fine discrimination. His personality combined a charming, modest address, with gracious manners, and a sensitive disposition, perhaps too sensitive for his own contentment.

His companionability was enhanced by an irresistible gift of Celtic humor that was ever ready and subtle. This, together with a remarkable memory, gave his conversation a commanding, interesting and refreshing effect, enlivened his lectures, and made him quick in a thrust or parry.

In methods of thought he belonged to an earlier generation than that of today. In his professional ethics he was punctilious to an extreme. He governed his behavior in accordance with the older code, rather than with the present adaptation or interpretation of it. He conducted similarly his extensive practice in an old-fashioned manner, much to his pecuniary disadvantage. His charity was what would be expected from his general fulness of heart. Many a little patient on leaving his clinic was gladdened by the touch of a coin or bill slipped into his hand.

A passing note should be made of his acquaintanceship, because of its size and universality. There was hardly a class in which he did not exercise influence. He once remarked that he found his large circle of acquaintances an embarrassment, and never could decide whether it was an asset or a liability.

Dr. Keany's understanding of diseases of the skin and his training and experience in them was unusual. He was unsurpassed as a clinician. Clever and accurate in diagnosis, his demonstration of a case would often sparkle with a masterful display of knowledge.

In consultation he inspired confidence in both patient and physician. He usually expressed a definite opinion, not merely an elaborate differential diagnosis of questionable comfort. His faith in his own judgment was great, and yet there was no semblance of egotism.

As a student he was fortunate in falling early under the influence of Kaposi, Hebra and Lassar. In the clinics of these teachers he spent three years, coming in contact with them socially as well as professionally. Previous to beginning his special studies in Austria and Germany, he served for about a year in the Rotunda Hospital, in Dublin.

Dr. Keany was essentially a practising physician with a large clientèle. He did not write for publication, as he had little time and no inclination for it. For nearly nineteen years he devoted much of his energy towards developing the great municipal hospital, of which he was a trustee. No institution ever had a more loyal and resourceful servant.

His death was not unexpected; but it came sooner than was anticipated to lay claim to a gentle, genial and generous man.

At the time of his decease he was a Physician to Diseases of the Skin at the Boston City Hospital, and the Carney Hospital, Professor of Dermatology in Tufts Medical School, Lecturer in Dermatology in the Harvard Graduate School of Medicine and Councillor of the New England Society of Dermatology and Syphilis.

Formerly he was consulting dermatologist to the St. Elizabeth's Hospital and St. Mary's Infant Asylum. He was also at one time dermatologist to the Boston Board of Health.

TOWNSEND W. THORNDIKE, M.D.

Miscellany.

BOSTON CITY HOSPITAL.

MEMORIAL RESOLUTIONS FOR DR. KEANY.

The death of Dr. Francis J. Keany, one of our Trustees, occurred on November 23, 1916, and it was voted that upon this sad bereavement, the following be spread upon the Trustees' records:—

Francis J. Keany, M.D., Harvard, was for nineteen years a Trustee of the Boston City Hospital, having been appointed in July, 1897, and was for ten years a member of the Staff in the Dermatological Department. He continued, in the son, the public spirit and indefatigable industry of his father, in devoting these many years to the alleviation of the sufferings of the unfortunate sick of the City, to the upbuilding of the Hospital, and to the maintenance of the best work and traditions of the medical profession. In him, his fellow Trustees lose a pleasant and valued co-worker, companion and friend of many years, and sorrowfully appreciate the great loss which has come by his decease, to themselves as well as to the Hospital and its work of charity.

The Trustees express their individual, personal grief at the sad death of their fellow Trustee, and extend to his widow and children their heartfelt sympathy and condolence in their affliction and sorrow.

Voted, that the Secretary convey to the late Dr. Keany's family their appreciations of condolence as recorded herein, forwarding to them a copy of these resolutions.

A. SHUMAN, *President*,
JOSEPH P. MANNING, *Secretary*,
CONRAD J. RUETER,
THOMAS A. FORSYTH.

Correspondence.

AMMONIUM SALICYLATE IN POLIOMYELITIS.

A correspondent, Dr. Beverley Robinson of New York, has recently called attention to the following letter published in the *New York Medical Journal* of December 16, 1916. This letter, with Dr. Robinson's note of comment, is appended.—Editor.

"INFLUENZAL" POLIOMYELITIS.

Carmel, New York, December 4, 1916.

To the Editors:

The interesting article on epidemic gastroenteritis, etc., by Dr. Bernard Frankel, in this week's issue of the *New York Medical Journal*, goes far to corroborate my contention that infantile paralysis is a development of influenza. As he states, "....infantile paralysis, has no clinical or etiological entity." This, I believe, should receive the endorsement of the entire medical profession. If such is the case, then it must be connected with some other disease.

The doctor states that "....it is a 'complication' of an infectious disease, that may or may not follow it." Why "complication"? I beg to respectfully take exception to this use of the word "complication" and desire to substitute instead the word "extension," or "development," and to attribute to influenza, the prevailing epidemic disease, the parentage of this interesting offspring. It is decidedly erroneous to regard it as a complication of any disease, just as it would be erroneous to consider, e. g., tuberculous meningitis as a complication of tuberculosis, or syphilitic osteomyelitis as a complication of syphilis. Just as these two phases of disease cited are extensions of tuberculosis and syphilis, respectively, so is poliomyelitis an extension of influenza.

It is an "extension" to the spinal cord and its membranes of the very same influenzal process that gives us "influenzal coryza," "influenzal bronchitis," "influenzal laryngitis," "influenzal gastritis," etc. It is but a very short step from any one of these to "influenzal poliomyelitis," and this is the correct term to use in identifying or placing the so-called mysterious disease.

To the amazing lack of appreciation by the medical profession of the true nature of influenza as a constitutional disease, and its right to rank side by side with such constitutional diseases as syphilis and tuberculosis, having, like them, similar ramifications and extensions throughout the body, is due the fact that many of its peculiar forms and developments are mistaken for distinct, separate diseases, whereas, in reality, they are part and parcel of the basic influenzal process, as I have repeatedly pointed out.

What has been said above regarding poliomyelitis holds good also for the epidemic gastroenteritis to which Dr. Frankel calls attention. The correct term to use in referring to it is "influenzal gastroenteritis."

Joseph D. Harrigan, M.D.

42 West 37th Street, New York,
Dec. 22, 1916.

Mr. Editor:

Dr. J. D. Harrigan's letter, in my judgment, is important and true. Why, then, ignore the only remedy of any value in the beginning of infantile paralysis, *i. e.*, salicylate of ammonium, as proven by Drs. D. M. Lewis and H. M. Sheffield?

Sincerely,

Beverley Robinson, M.D.

A RULING OF THE STATE BOARD OF REGISTRATION.

December 24, 1916.

Mr. Editor:—

I beg to submit to the medical profession a ruling of the State Board of Registration in Medicine in the case which I reported in the Journal on Nov. 23d, also a subsequent finding of the Industrial Accident Board on the same case.

The State Board of Registration found in the case "possible technical violation of the law," but found the person and corporation "well-intentioned" and the State Board has done nothing. No change whatever has been made and the person in charge continues to do more surgical work, than all the physicians in the district combined.

I will quote the finding of the Industrial Accident Board in its entirety.

"That at the time of this employee's injury there were posted in the plant of the insured, in several conspicuous places, notices to the employees of the physicians selected by the insurer to give necessary medical treatment in case of accident. The Board, however, find that these notices were inoperative by reason of the practice prevailing at the plant, which practice we find was acquiesced in by the insurer. It is reasonable to infer from all the evidence that instead of being posted in compliance with a statutory duty, these notices were intended for use only in the event of proceedings against the insurer to recover compensation for medical treatment obtained elsewhere than at the plant or by the physicians named in the notice.

"That the insurer did not furnish reasonable medical services in this case. It cannot be contended that the act contemplated that employees should submit themselves to treatment at the hands of a young man who is not only not a physician, but is not even a registered nurse, nor that such a person should judge of the seriousness of their injury. This is only one of a number of similar cases from this plant which have been brought to the attention of the Board. If employers are to receive a concession in their premium rate by maintaining medical departments, these departments should be in charge of properly qualified practitioners. This department at the Sturtevant Company is not a first-aid room; it is a continuous treatment room, dependent upon the judgment of the person in charge. It appears to us to be a clear violation of S. 8, C. 76, R. L. The danger to the employee from such a practice is plain without further comment from us."

Physicians can draw their own conclusions from a study of the two reports.

Yours very truly,

Charles Malone, M.D.

5 Glen Road, Jamaica Plain, Mass.

AN UNUSUAL CASE.

Athol, Mass., Dec. 30, 1916.

Mr. Editor:

Mr. A. J. F. of Athol, Mass., painter by trade, was taken ill on December 21, 1916, with complete obstruction of the bowels and suppression of urine, which continued until toward the middle of the day, December 28, 1916. The patient now seems to be making a good recovery. If, in your judgment, this record is sufficiently unique to warrant making a record of it in your Journal, you are at liberty to do so.

Respectfully yours,

A. V. Bowker, M.D.

INDUSTRIAL ACCIDENT BOARD RULING.

BOSTON, Jan. 2, 1917.

Mr. Editor:

The following is a copy of a ruling issued by the Industrial Accident Board as the result of a conference upon the petition of certain members of the medical profession in regard to the matter of furnishing hospital treatment to injured employees under the Workmen's Compensation Act:

The Industrial Accident Board is in receipt of the following "protest" from various members of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, to the number of several hundred:

> "The undersigned medical men wish to protest against the practice of a certain few insurance companies of referring their cases to open hospitals and clinics. If the patients go there themselves well and good, but to "furnish" medical care by referring the patient to a charity is virtually telling him to go take care of himself; it gives him no care or privilege whatsoever, which is not the intent of the Act, as we understand it.
>
> "We refer this question to your honorable body with the request for a ruling as to whether such reference can be considered adequate care within the meaning of the Act."

After hearing representatives of the physicians and the insurers, the Industrial Accident Board states its position on the matter to be as follows:

The Board does not approve of the practice, if it exists, of insurance companies in referring cases to open hospitals and clinics, unless insurers have previously made arrangements with such hospitals and clinics for the furnishing of treatment to injured employees.

To "furnish" treatment within the meaning of the Act imports, in the opinion of the Board, something more than a mere direction to an employee to go to an open hospital or clinic. It requires that the insurer shall make adequate arrangements for the care of those to whom the duty is owed in the event of injury. Such an arrangement between the insurer and the hospital would imply that the hospital is prepared to give the injured employee reasonable services; and in any case where the adequacy of such service, arranged for between insurer and the hospital, is questioned, it will be considered by the Board on its merits.

FRANK J. DONAHUE, *Chairman.*

NOTICE.

HARVEY SOCIETY.—The fifth of the current series of lectures before the Harvey Society will he delivered at the New York Academy of Medicine on Saturday evening, January 13, by Professor E. V. McCollom, on The Supplementary Dietary Relationships among our Natural Foodstuffs.

RESIGNATIONS AND APPOINTMENTS.

It is announced that DR. FRANKWOOD E. WILLIAMS, chairman of the Massachusetts Advisory Prison Board and Executive Secretary of the Massachusetts Society for Mental Hygiene, has resigned both these positions to accept an appointment as Associate Medical Director of the National Committee for Mental Hygiene.

It is announced that Mayor Curley has appointed DR. HENRY S. ROWEN of Brighton, Mass., to succeed the late Dr. Francis J. Keany as trustee of the Boston City Hospital.

It is announced that PROFESSOR W. KOLLE, chief of the institute for bacteriology and hygiene of the University of Berne, has been appointed to succeed Professor Ehrlich in the Institute for Experimental Therapy at Frankfort. PROFESSOR HANS SACHS, formerly assistant to Professor Ehrlich at Frankfort, has been appointed director of the Institute, under Professor Kolle.

It is announced that DR. WILLIAM J. BRICKLEY has resigned as resident surgeon of the Haymarket Square Relief Station, and that DR. JOHN G. BRESLIN, formerly chief of the East Boston Relief Station, has been appointed to succeed him on January 1, 1917. DR. BERNARD F. DEVINE, present chief of the East Boston Relief Station, has been appointed to assist Dr. Breslin at the Haymarket Square Station.

RECENT DEATHS.

DR. EDWARD MARSHALL BUCKINGHAM, treasurer of the Massachusetts Medical Society since May 22, 1896, died suddenly following an attack of angina pectoris, at his home in Boston, December 23, 1916, aged 68 years.

He received the degree of M.D. from the Harvard Medical School in 1874, and had practised his profession in Boston since that time. A full obituary notice of Dr. Buckingham will appear in a later issue of the JOURNAL.

DR. EDMUND DOE SPEAR, otologist and writer, died at his home in Jamaica Plain, December 25, 1916, at the age of 65. He was born in Boston, October 17, 1851, and was educated in the public schools and at the Harvard Medical School, where he received his degree in 1874. He was on the staff of the Massachusetts Charitable Eye and Ear Infirmary and was aural surgeon to the Boston City Hospital and a frequent contributor to medical journals. He was a member of the American Otological Society and the Massachusetts Medical Society. He leaves his widow and two daughters.

WILLIAM J. COATES, M.D.V., who died at New York City on December 19, was born there in 1857. After graduating from the American Veterinary College in 1877, he studied medicine at New York University. Later, when the American Veterinary College became a part of the University, Dr. Coates became dean of the former institution.

EDWIN H. SIMMONS, D.M.D., who died at Worcester, Mass., on December 24, was born in 1868. He had practised dentistry in that city for many years. He is survived by his widow and three sons.

DR. C. S. HÄGLER, who died recently of carcinoma at Basel, Switzerland, was born in 1862. He was a noted surgeon and bacteriologist and was connected with the University of Basel.

DR. K. B. PONTOPPIDAN, who died recently at Copenhagen, was born in 1853. He was professor of nervous and mental diseases and of forensic medicine at the University of Copenhagen, and since 1898 had been chief of the Aarhus Insane Asylum.

DR. ABNER LITTLE MERRILL, of Exeter, N. H., who died on December 20, in Boston, was born at Exeter on January 23, 1826. After graduation from the Phillips Exeter Academy, he entered Harvard, from which he received the degree of A.B. in 1846, and that of M.D., in 1849. With the exception of Dr. Nicholas E. Soule, he was the oldest living alumnus of the College and the Medical School. After practising his profession for a time, Dr. Merrill retired from medicine and went into business at Newburyport, Mass., where he continued until 1890. In 1859 he married Miss Harriet M. Robinson, who died in February, 1894. Dr. Merrill was the last surviving member of the Harvard class of 1846.